Vol. 1032 Number 4

OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

Route to:

U.S.
DEPARTMENT
OF COMMERCE

Patent
and
Trademark
Office

OFFICIAL GAZETTE of the UNITED STATES PATENT AND TRADEMARK OFFICE

July 26, 1983 Volume 1032 Number 4

CONTENTS

	Page
Patent and Trademark Office Notices	
Patent Cooperation Treaty (PCT) Information	1032 OG 30
Reissue Applications Filed	1032 OG 30
Request for Reexamination Filed	1032 OG 30
Notice of Availability for Licensing	1032 OG 31
Patents Available for License or Sale	1032 OG 31
Deposit Account Authorizations	1032 OG 32
PTO Status	1032 OG 34
Patent Certificates of Correction	1032 OG 35
Disclaimers	1032 OG 35
Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries	1032 OG 36
Condition of Patent Applications	1032 OG 37
Reexaminations	1032 OG 39
Reissue Patents Granted (31,320)	1303
Plant Patents Granted (5,073)	1307
Patents Granted	
General and Mechanical (4,394,781)	1309
Chemical (4,395,261)	1479
Electrical (4,395,581)	1565
Design Patents Granted (269,824)	1637
Index of Patentees	PI 1
Indices of Reissue, Reexamination, Design and Plant Patentees	PI 38
Classification of	
Patents (Including Reissues and Reexaminations)	PI 41
Designs and Plants	PI 43
Geographical Index of Residence of Inventors	
Patents (Including Reissues)	PI 44
Designs and Plants	PI 45
Change of Address Form and Subscription Order Form	Back Page

The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly.

THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly.

GENERAL INFORMATION concerning PATENTS.

GENERAL INFORMATION concerning TRADEMARKS.

PRINTED COPIES OF PATENTS are furnished by the Patent and Trademark Office at $1.00 each; PLANT PATENTS in color, $8.00 each; copies of TRADEMARKS at $1.00 each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.T.O.

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT member countries see the notice appearing in the Official Gazette at 1017 O.G. 10 on Apr. 13, 1982. For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States, see the notice in the Official Gazette of Sept. 28, 1982 at 1022 O.G. 52.

Note that the domestic PCT fees have been increased as of Oct. 1, 1982 by a rule change to 37 CFR 1.445 that was published at 1021 O.G. 11 on Aug. 10, 1982. Also note that the international PCT fees have changed as of Jan. 1, 1983 and the Search Fee for the European Patent Office as Searching Authority changed as of Jan. 22, 1983. The notice regarding the change in international fees and the Search Fee for the European Patent Office appeared at 1025 O.G. 27, on 28 Dec. 1982. The current schedule of fees is as follows:

Transmittal fee	$ 125.00
Search fee	
U.S. Patent and Trademark Office as Searching Authority	
· No corresponding prior U.S. national application filed	500.00
· Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
· All cases	670.00
International Fees	
Basic Fees (first 30 pages)	265.00
Basic Supplemental Fee (for each page over 30)	5.00
Designation fee (for each national or regional office)	65.00

GERALD J. MOSSINGHOFF,
Dec. 3, 1982. *Commissioner of Patents and Trademarks.*

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

4,094,801, Re. S.N. 430,745, Filed Sept. 30, 1982, Cl. 252/33, MAGNESIUM-CONTAINING COMPLEXES, METHOD FOR THEIR PREPARATION, AND COMPOSITIONS CONTAINING THE SAME, John Wesley Forsberg, Owner of Record: *The Lubrizol Corp., Wickliffe, Ohio,* Attorney or Agent: J. W. Adams, et al., Ex. Gp.: 116

4,205,377, Re. S.N. 382,692, Filed May 27, 1982, Cl. 364/431, CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINE, Yoshishige Oyama, et al., Owner of Record: *Hitachi, Ltd., Tokyo, Japan,* Attorney or Agent: Donald R. Antonelli, Ex. Gp.: 237

4,278,413, Re. S.N. 499,269, Filed May 31, 1983, Cl. 425/383, APPARATUS FOR INVERTING TIRES, Merlyn R. Holt, Owner of Record: *Hilt Tire Feedbunk, Inc., St. Francis, Kans.,* Attorney or Agent: Ancel W. Lewis, Jr., Ex. Gp.: 147

4,321,251, Re. S.N. 471,499, Filed Mar. 2, 1983, Cl. 424/003, DETECTION OF MALIGNANT LESIONS OF THE ORAL CAVITY UTILIZING TOLUIDINE BLUE RINSE, Arthur Mashberg, Owner of Record: *United States of America, as represented by the Secretary of the Department of Health, Education and Welfare, Washington, D.C.,* Attorney or Agent: John S. Roberts, Jr., Ex. Gp.: 125

4,324,072, Re. S.N. 498,055, Filed May 25, 1983, Cl. 49/129, INSULATED MULTIPLE COMPONENT SINGLE PLANE BUILDING STRUCTURE PORTAL CLOSURE, Maurice E. Sterner, Jr., Owner of Record: *Products Design & Development, Inc., York, Pa.,* Attorney or Agent: Paul T. O'Neil, et al., Ex. Gp.: 354

4,356,532, Re. S.N. 499,095, Filed May 27, 1983, Cl. 361/393, ELECTRONIC PACKAGE AND ACCESSORY COMPONENT ASSEMBLY, Charles J. Donaher, et al., Owner of Record: *Thomas and Betts Corp., Raritan, N.J.,* Attorney or Agent: Robert M. Rodrick, et al., Ex. Gp.: 215

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

3,416,637, Reexam. No. 90/000,401, Requested: June 15, 1983, Cl. 192/98, RADIALLY MOVABLE CLUTCH BEARING, Jean Maurice, Owner of Record: *Societe Anonyme Francaise du Ferodo, Paris, France,* Attorney or Agent: Young & Thompson, Ex. Gp.: 350, Requester: Barry E. Bretschneider, Washington, D.C.

3,665,554, Reexam. No. 90/000,400, Requested: June 16, 1983, Cl. 17/45, METHOD OF EVISCERATING SHELL FISH, Richard T. Wenstrom, et al., Owner of Record: *Slade Gorton & Co., Inc., Boston, Mass.,* Attorney or Agent: Thomas C. O'Konski, Ex. Gp.: 320, Requester: William R. Lambert, Merritt Island, Fla.

3,824,776, Reexam. No. 90/000,408, Requested: June 20, 1983, Cl. 57/208, FABRIC HAVING IMPROVED PICK RESISTANCE, Joe F. London, Jr., Owner of Record: *Requester,* Attorney or Agent: Cushman, Darby & Cushman, Ex. Gp.: 245, Requester: Burlington Industries, Inc., Greensboro, N.C.

3,972,174, Reexam. No. 90/000,406, Requested: June 20, 1983, Cl. 52/208, TEXTURED YARN AND FABRIC, Joe F. London, Jr., et al., Owner of Record: *Requester,* Attorney or Agent: Cushman, Darby & Cushman, Ex. Gp.: 354, Requester: Burlington Industries, Inc., Greensboro, N.C.

4,108,029, Reexam. No. 90/000,410, Requested: June 23, 1983, Cl. 83/54, CUT-OFF DIE SET, Alexander Borzym, Owner of Record: *Alpha Industries, Inc., Detroit, Mich.,* Attorney or Agent: Krass & Young, Ex. Gp.: 324, Requester: Vogel Tool & Die Corp., Stone Park, Ill.

4,301,258, Reexam. No. 90/000,403, Requested: June 13, 1983, Cl. 526/173, CYCLIC ORGANO CARBONATE AND SULFITE COUPLING AGENTS FOR LIVING POLYMERS OF CONJUGATED DIENES, Joginder Lal, et al., Owner of Record: *Goodyear Tire and Rubber Co., Akron, Ohio,* Attorney or Agent: J. Y. Clowney, Ex. Gp.: 140, Requester: Michelin & Cie, Cedex, France

4,317,327, Reexam. No. 90/000,405, Requested: June 20, 1983, Cl. 56/396, PUSHED DETHATCHING UNIT, Charles W. Doering, Owner of Record: *Brinly-Hardy Co., Inc., Louisville, Ky.,* Attorney or Agent: Frank C. Leach, Ex. Gp.: 330, Requester: Toro Co., Minneapolis, Minn.

4,349,070, Reexam. No. 90/000,397, Requested: June 6, 1983, Cl. 165/173, TUBE MAT HEAT EXCHANGER, Michael F. Zinn, et al., Owner of Record: *Bio-Energy Systems, Inc., Ellenville, N.Y.,* Attorney or Agent: Charles J. Brown, Ex. Gp.: 340, Requester: Environmental Resources, Inc., Las Vegas, Nev.

National Technical Information Service

U.S. GOVERNMENT-OWNED INVENTIONS

Notice of Availability for Licensing

The inventions listed below are owned by agencies of the U.S. Government and are available for licensing in the U.S. in accordance with 35 U.S.C. 207 to achieve expeditious commercialization of results of federally funded research and development. Foreign patents are filed on selected inventions to extend market coverage for U.S. companies and may also be available for licensing.

Technical and licensing information on specific inventions may be obtained by writing to:

Office of Government Inventions and Patents
U.S. Department of Commerce
P.O. Box 1423
Springfield, Va. 22151

Please cite the number and title of inventions of interest.

GEORGE KUDRAVETZ,
Program Manager,
Office of Government Inventions and Patents
National Technical Information Service
U.S. Department of Commerce.

DEPARTMENT OF AGRICULTURE

SN 6-238,401 (4,381,023). AUXILIARY TORQUE BACK-UP ROLL.
SN 6-290,542 (4,385,702). VIBRATING SEPARATOR.

DEPARTMENT OF THE AIR FORCE

SN 6-441,814. HELMET MOUNTED TELESCOPE.
SN 6-482,377. TWO-DIMENSIONAL BULK ACOUSTIC WAVE CORRELATOR-CONVOLVER.
SN 6-486,477. OPTICAL DISC TRANSPORT SYSTEM.
SN 6-486,598. FLEXIBLE LINE SUPPORT ASSEMBLY.
SN 6-487,340. CLOCK DISTRIBUTION CIRCUIT FOR ACTIVE APERTURE ANTENNA ARRAY.
SN 6-488,900. ROBOTIC KITTING.
SN 6-492,862. HIGH PERFORMANCE LIQUID CHROMATOGRAPHY (HPLC) ANALYSIS OF SULFUR MUSTARDS AND THEIR DECOMPOSITION BY-PRODUCTS BY DERIVATIZATION.

DEPARTMENT OF THE ARMY

SN 6-328,766 (4,376,663). METHOD FOR GROWING AN EPITAXIAL LAYER OF CDTE ON AN EPITAXIAL LAYER OF HGCDTE GROWN ON A CDTE SUBSTRATE.
SN 6-478,385. CONTOURED CONFIGURATED DETONATING CORD AND DETONATOR.

DEPARTMENT OF COMMERCE

SN 6-192,129 (4,386,233). CRYTOGRAPHIC KEY NOTARIZATION METHODS AND APPARATUS.
SN 6-465,942. METHOD AND APPARATUS UTILIZING CRYSTALLINE COMPOUND SUPERCONDUCTING ELEMENTS HAVING EXTENDED STRAIN OPERATING RANGE CAPABILITIES WITHOUT CRITICAL CURRENT DEGRADATION.

DEPARTMENT OF HEALTH AND HUMAN SERVICES

SN 6-302,557 (4,386,093). (±) 3-DEAZARRISTEROMYCIN AND USES.

DEPARTMENT OF THE INTERIOR

SN 6-293,027 (4,385,998). REMOVAL OF SUSPENDED SOLIDS FROM WATER.

DEPARTMENT OF THE NAVY

SN 5-895,828 (4,376,302). PIEZOELECTRIC POLYMER HYDROPHONE.
SN 6-101,362 (4,347,593). PIEZOCERAMIC TUBULAR ELEMENT WITH ZERO END DISPLACEMENT.
SN 6-214,601 (4,380,022). MONOLITHIC FULLY INTEGRATED CLASS B PUSH-PULL MICROWAVE GaAs MESFET WITH DIFFERENTIAL INPUTS AND OUTPUTS WITH REDUCED MILLER EFFECT.
SN 6-314,327 (4,374,665). MAGNETOSTRICTIVE DEVICES.

Patents Available for License or Sale

3,620,043. SPLINE-TYPE PIVOTS, UNIVERSAL JOINTS AND FEXIBLE COUPLINGS. *James A. Oliff, Esq.,* Parkhurst & Oliff, 277 So. Washington St., Alexandria, Va. 22314, (703) 836-6400.

3,374,022. COMBINATION CANE AND PICKUP STICK. *Howard L. Tagg,* 17 Hawk Lane, Levittown, N.Y., 11756.

3,798,374. SOUND REPRODUCING SYSTEM UTILIZING MOTIONAL FEEDBACK. *Stanley Thayer Meyers,* 122 N. Riverside Ave. Red Bank, N.Y.

3,832,965. SUBMERSIBLE TRANSPORT APPARATUS. *Paul J. Walker,* P.O. Box 2769, Nipawin Saskatchewanss Canada SOE IEO.

3,961,865. CONVERSION BRACKET FOR WELL PUMP. *Vernon E. Spaulding,* R #3 Box 149, Vine Grove, Ky. 40175.

4,136,764. MOTHER ALICE'S BREAD VENDING MACHINE. *Alice Johnson,* 8650 Belford Ave #1, Los Angeles, Calif. 90045.

4,302,883. EXACTO-MAC. *Exacto-Mac Limited Partnership %* Thompson, Weir & Barclay, P.O. Box 2044, New Haven, Conn. 06521.

4,368,391. "HYDRAULIC PROCESS AND APPARATUS FOR THE RECOVERY OF ELECTRICAL ENERGY FOR USE IN MOTOR TEST STATIONS. *Olivier Helloulin deMenibus.* Please contact: Neil F. Greenblum, Esq. Sandler & Greenblum 701 South 23rd St., Arlington, Va. 22202. (703) 521-7800.

The following U.S. patents are available for license by the inventor: Harold J Weber, P.O. Box 315, Sherborn, Mass. 01770.

4,150,497. MANUAL GEARSHIFT AND CLUTCH TRAINING APPARATUS INCLUDING SENSORY INDICATION FOR MOST FAVORABLE OPERATOR CONTROL.

4,300,650. MULTILEVEL POWER ASSISTED STEERING.

4,346,766. DRILL CRADLE WITH ELONGATED SLIDE TRACK. Salzgitter Maschinen Und Anlagen Aktiengesellschaft Salzgitter, Germany. Correspondence to: Michael J Striker, 360 Lexington Ave, New York, N.Y. 10017.

4,321,844. KRILL BRAKE ADJUSTING TOOL. *Olga Krill,* correspondence to: Andrea M. Krill, 1750 Walton Rd., Whitpain Office Campus, Blue Bell, Pa. 19422.

4,357,137. SHAFT COUPLING. *James A. Oliff, Esq.,* Parkhurst & Oliff, 277 So. Washington St., Alexandria, Va. 22314. (703) 836-6400.

4,364,411. LIQUID LINE THERMAL BARRIER. *Payton et al.* Beach & Brown, 3107 Eastlake Ave. East, Seattle, Wash. 98102.

4,364,703. ROTARY PARKING STRUCTURE FOR PASSENGER CARS. *Yang-Kaung Pai,* Taipei, Taiwan. Contact Holman & Stern, 2401 Fifteenth St., N. W., Washington, D.C. 20009, (202) 483-2234.

4,374,425. A SINGLE ACTUATOR ELECTRONIC MINICOMPUTER. *Dr. Louis R. Fuka,* 2073 North Rd., Los Alamos, N. Mex. 87544.

The inventions listed below owned by applicant Allan Westerlund and Licensee Harald Soderlund, are available for licensing.

4,227,727. "DOORCATCH".

4,357,038. "DOORCATCH".

Please contact James M Slattery of Birch, Stewart, Kolasch & Birch at (203) 241-1300.

The General Electric Co. is prepared to grant non-exclusive licenses under the following patents upon reasonable terms to domestic manufacturers.

Applications for license may by addressed to Patent Counsel, Gas Turbine Division, General Electric Co., 1 River Rd., Bldg. 500, Room 218, Schenectady, N.Y. 12345.

4,350,473. LIQUID COOLED COUNTER FLOW TURBINE BUCKET.

4,326,373. INTEGRATED GAS TURBINE POWER GENERATION SYSTEM AND PROCESS.

Application for license may be addressed to the General Electric Co., Division Patent Counsel Housewares and Audio Business Division, 1285 Boston Ave., Bridgeport, Conn. 06602.

4,370,070. DIGITAL THERMOMETER HAVING FAHRENHEIT AND CELSIUS READOUT MODES.

4,375,701. BATTERY OR AC DRIVEN RADIO RECEIVER POWER SUPPLY.

Applications for license may be addressed to: Patent Counsel, Mobile Radio Products Department General Electric Co., Mountain View Rd., Lynchburg, Va. 24502.

4,350,972. MULTIPLE CONSOLE CONTROL SYSTEM.

4,284,907. CHARGE TRANSFER FILTER.

4,284,908. CHARGE DOMAIN FILTER WITH SINGLE TRANSMISSION ZERO.

4,284,909. CHARGE DOMAIN FILTER WITH A PLURALITY OF TRANSMISSION ZEROS.

Application for license may be addressed to the General Electric Co., Division Patent Counsel, Housewares and Audio Business Division, 1285 Boston Ave., Bridgeport, Conn. 06602.

4,347,464. FET MOTOR DRIVE SYSTEM.

4,355,692. THICK FILM RESISTOR FORCE TRANSDUCERS AND WEIGHING SCALES.

Application for license may be addressed to: General Electric Co., Component Motor Division 1635. Broadway, P.O. Box 2204, Fort Wayne, Ind. 46801-2204, Attention: Patent Counsel.

4,323,217. MOTOR MOUNTING ASSEMBLY INCLUDING EXTENDABLE BAND.

4,327,481. METHOD OF ASSEMBLING AN ELECTRICAL DEVICE.

4,341,987. TWO-SPEED SINGLE PHASE MOTOR WITH CENTRIFUGAL SWITCH.

Application for license may be addressed to the General Electric Co., Division Patent Counsel, Housewares and Audio Business Division, 1285 Boston Ave., Bridgeport, Conn. 06602.

4,370,070. DIGITAL THERMOMETER HAVING FAHRENHEIT AND CELSIUS READOUT MODES.

4,375,701. BATTERY OR AC DRIVEN RADIO RECEIVER POWER SUPPLY.

Applications for license may be addressed to: General Electric Co., Component Products Group, 1635 Broadway, P.O. Box 2204, Fort Wayne, Ind. 46801-2204, Attention: Patent Counsel.

4,110,632. DEVICE, METHOD AND SYSTEM FOR CONTROLLING THE SUPPLY OF POWER TO AN ELECTRICAL LOAD.

4,227,103. APPARATUS FOR INSULATING AN INTERNAL MOTOR CONNECTION.

4,237,508. ELECTRICAL CONTROL.

4,247,978. METHODS OF MAKING SLOT LINERS AND STATOR ASSEMBLIES INCLUDING SAME.

4,355,250. SELF-ALIGNING BEARING ASSEMBLY.

4,360,847. DIODE ASSISTED RELAY CONTACTOR.

Otis Engineering Corporation is prepared to grant nonexclusive licenses under the following patents upon reasonable terms. These patents relate generally to Through Flow Line (TFL) or Pumpdown completion and equipment used in oil and gas wells. Address inquiries to Patent Attorney, Otis Engineering Corp., P.O. Box 34380, Dallas, Tex. 75234, Telephone (214) 323-3882.

3,543,852. WELL TOOLS.

3,568,770. LATCH DEVICE FOR SUPPORTING WELL TOOLS IN A FLOW CONDUCTOR.

3,603,110. WELL TOOLS.

3,608,631. APPARATUS FOR PUMPING TOOLS INTO AND OUT OF A WELL.

3,610,336. LANDING NIPPLE WITH LOCATOR AND ORIENTING MEANS.

3,637,012. WELL FLOW CIRCULATING METHODS.

3,642,069. JAR STROKE ACCELERATOR FOR PUMPDOWN WELL TOOL.

3,654,995. FLUID CIRCULATING METHOD AND SYSTEM FOR WELLS.

3,664,427. WELL FLOW CONTROLLING SYSTEMS, METHODS AND APPARATUS.

3,666,012. WELL CROSS-OVER APPARATUS FOR SELECTIVE COMMUNICATION OF FLOW PASSAGES IN A WELL INSTALLATION.

3,680,637. WELL TOOLS AND METHODS OF OPERATING A WELL.

3,739,850. CROSS OVER ASSEMBLY.

Deposit Account Authorizations

The rules of practice were amended effective Oct. 1, 1982, at 37 CFR 1.25(b) to state that: "A general authorization to charge all fees, or only certain fees, set forth in §§1.16 to 1.18 to a deposit account may be filed in an individual application, either for the entire pendency of the application or with respect to a particular paper

filed." A general authorization would not apply to document supply fees under §1.19, such as those required for certified copies; to post-issuance fees under §1.20, such as those required for maintenance fees; or to miscellaneous fees and charges under §1.21, such as assignment recording fees.

Many applications filed prior to Oct. 1, 1982, contain broad language authorizing *any* additional fees which might have been due to be charged to a deposit account. The Patent and Trademark Office does not interpret such broad authorizations, filed prior to Oct. 1, 1982, to include authorization to charge to a deposit account the issue fee or other fees in sections 1.16, 1.17 and 1.18 except those associated with the paper containing the broad authorization. However, such a broad authorization filed in an application on or after Oct. 1, 1982, will be interpreted as authorization to charge the issue fee; as well as any other fee set forth in §§1.16, 1.17 or 1.18. Fees under sections 1.19, 1.20 and 1.21 will not be charged as a result of a general authorization under section 1.25.

It is recommended that authorizations to charge fees to deposit accounts include reference to the particular fees or fee sections of the rules which applicant intends to authorize. For example, if filing and processing fees under §§1.16 and 1.17 only are intended to be included in the authorization, and not the issue fee under §1.18, the authorization could read: "The Commissioner is hereby authorized to charge any fees under 37 CFR 1.16 and 1.17 which may be required during the entire pendency of the application to Deposit Account No. _____." Such an authorization would clearly exclude issue fees under 37 CFR 1.18 while including all the filing and processing fees listed in 37 CFR 1.16 and 1.17. Similarly, if it were intended to authorize the charging of fees relating only to a specific paper, the authorization could read "The Commissioner is hereby authorized to charge any fees under 37 CFR 1.16 and 1.17 which may be required by this paper to Deposit Account No. _____." Such authorizations would cover situations in which a check to cover a filing and processing fee under 37 CFR 1.16 and 1.17 was omitted or was for an amount less than the amount required.

It is extremely important that the authorization be clear and unambiguous. If applicants file authorizations which are ambiguous and which deviate from the usual forms of authorizations, the Office may not interpret the authorizations in the manner applicants intend. In such cases applicants could be subject to further expenses, petitions, etc. in order to correct fees which were not charged as intended due to an ambiguous authorization.

July 1, 1983.

GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

Status of PTO Services

The following is an update of the status of PTO services as of June 30, 1983:

Service Item	FY 1983 Performance Goal	Actual	Comment
Filing Receipts:			
Patents	22	22	
Trademarks	30	75	Reduced by 13 days in June.
Patent Copies:			
Window Coupons	5	99% within 5 days	
Mail Coupons	29	100% within 22 days	
Letter Orders	34	100% within 15 days	
Certified Copies:			
Trademark Registrations	30	13	
Applications-As-Filed	20	91% within 10 days	
File-Wrapper/Contents	N/A	95% within 20 days	
Walk-up Certification	1	99% within 1 day	
Trademark Search Library:			
Filing Drawings	21	49	
Filing Reg. Certificates	3	15	
Assignments:			
Patents	25	25	
Trademarks	25	17	Reduced by 5 days in June
Avg. Days from Issue Fee Payment to Issue Date	90-100	100	
Patent Official Gazette:			
In Bookstore	Issue Date	On Schedule	
Mailed	Issue Date	Avg. 1 day late	
Patent Grants Mailed	Issue Date	Avg. 1 day late	
Patent Copies Available	Issue Date	99%	
Trademark Official Gazette:			
In Bookstore	Issue Date	On Schedule	
Mailed	Issue Date	On Schedule	
Trademark Regs. Mailed	Issue Date	On Schedule	

IMPROVEMENTS TO SERVICES

- *Pre-Examination Processing*—A major milestone in reaching 18 month pendency has been met. The pre-examination backlog inventory goal of 9,100 cases was met on schedule in June. This represents mailing receipts to applicants within an average of 22 days and making cases available to the Patent Examining Corps within 30 calendar days. The pre-examination backlog was over 30,000 cases in Feb. 1982, when it was taking 100 days to mail filing receipts and 124 days to get the applications to the Examining Corps. The inventory now is the lowest level it has been since 1978.
- *New Microfilm Reader/Printers*—Two new Minolta 505 reader/printers were installed to replace old equipment with U.S. Patent microfilm. This equipment produces high quality bond paper output. The response from the public has been very positive. We plan to replace 14 more of the current reader/printers with Minolta's.

Reconstruction of Files—In the past, when patent application files need to be reconstructed due to loss of the original file, applicants have been requested to resubmit a copy of the entire file. A new procedure has been implemented, whereby only papers submitted after the original application need to be resubmitted. A copy of the application-as-filed will be obtained from the PTO's microfilm copy. This will alleviate some of the burden imposed on the public when it is necessary for the Office to reconstruct a file.

June 30, 1983.

THERESA A. BRELSFORD,
Assistant Commissioner for Administration.

PATENT NOTICES

Certificates of Correction for the Week of July 26, 1983

PP. 05,051	4,336,746	4,370,469	4,378,830
D. 251,401	4,343,597	4,370,624	4,379,171
D. 268,218	4,349,579	4,370,695	4,379,338
D. 268,458	4,349,721	4,370,704	4,380,348
D. 265,889	4,350,145	4,371,932	4,380,670
4,017,290	4,350,774	4,372,765	4,380,849
4,021,253	4,354,541	4,372,971	4,381,271
4,041,714	4,355,140	4,373,273	4,381,450
4,053,638	4,356,332	4,373,997	4,382,133
4,173,668	4,356,342	4,374,137	4,382,361
4,238,349	4,358,376	4,374,222	4,382,412
4,261,989	4,360,871	4,374,527	4,382,717
4,285,840	4,361,515	4,374,752	4,382,807
4,293,501	4,362,820	4,375,141	4,383,162
4,293,727	4,363,691	4,375,722	4,383,422
4,300,144	4,363,716	4,376,069	4,383,979
4,300,553	4,365,389	4,376,284	4,384,274
4,304,169	4,365,508	4,376,662	4,384,601
4,330,362	4,366,026	4,377,453	4,384,614
4,330,387	4,366,244	4,377,465	4,384,844
4,333,363	4,366,506	4,377,605	4,385,542
4,334,246	4,366,842	4,378,223	4,385,964
4,336,207	4,366,887	4,378,271	
4,336,693	4,370,011	4,378,362	

Disclaimers

Des. No. 264,516.—*Michel Joseph,* Saverne, France. BATHING SUIT. Patent dated May 25, 1982. Disclaimer filed May 19, 1983, by the assignee, *Adidas Fabrique de Chaussures de Sport.*

The term of this patent subsequent to Nov. 17, 1995, has been disclaimed.

3,830,764.—*Donald E. Hudgin,* Princeton Junction and *Thomas Zawadzki,* Princeton, N.J. DEGRADABLE HYDROCARBON POLYMERS. Patent dated Aug. 20, 1974. Disclaimer filed June 10, 1983, by the assignee, *Princeton Polymer Laboratories, Inc.*

Hereby enters this disclaimer to claims 5, 6, 15, 17, 18 and 19 of said patent.

4,322,666.—*Rolf Muller,* St. Georgen, Fed. Rep. of Germany. BRUSHLESS, PERMANENT MAGNET D-C PULSE CURRENT CONTROLLED, ESSENTIALLY UNIFORM TORQUE DYNAMO ELECTRIC MACHINE PARTICULARLY MOTOR. Patent dated Mar. 30, 1982. Disclaimer filed July 14, 1982, by the assignee, *Papst Motoren GmbH & Co., KG.*

The term of this patent subsequent to July 8, 1997, has been disclaimed.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Birmingham Public Library	(205) 254-2555
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7607
California	Los Angeles Public Library	(213) 626-7555 Ext. 273
	Sacramento: California State Library	(916) 322-4572
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware	(302) 738-2238
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Illinois	Chicago Public Library	(312) 269-2865
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6552
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214, Ext. 215
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7814
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 930-0850
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1321**
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 226
South Carolina	Charleston: Medical University of South Carolina	(803) 792-2372
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 528-2957
Texas	Dallas Public Library	(214) 749-4176
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

All of the above-listed libraries offer CASSIS (Classification And Search Support Information System), which provides direct, on-line access to Patent and Trademark Office data.

*Collection organized by subject matter.

**Call only between the hours of 10:00 a.m. and 5:00 p.m.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF April 2, 1983

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director ..... Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	1-16-81
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director ..... Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	11-20-81
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director .... Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthdontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	3-1-82
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director ..... Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	3-09-82
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director ..... Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	1-12-82
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	5-22-81
SPECIAL LAWS ADMINISTRATION, GROUP 220—KENNETH L. CAGE, Director ..... Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	3-30-81
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—EARL LEVY, Director ..... Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	1-05-81
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director ..... Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling; Shaft; Impellers; Rotary Fluid Motors.	5-12-81
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director ..... Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	8-25-80
DESIGN, GROUP 290—KENNETH L. CAGE, Director ..... Industrial Arts; Household, Personal and Fine Arts.	1-30-81
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director ..... Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	5-18-81
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—STEPHEN G. KUNIN, Director Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	7-27-81
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director ..... Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	8-27-82
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director ..... Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	11-17-80
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—A. L. SMITH, Director ..... Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	9-17-80

Expiration of patents: The patents within the range of numbers indicated below expire during April 1983, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,243,822 to 3,248,737, inclusive

Plant Patents ..... Numbers 2,616 to 2,627 inclusive

REEXAMINATIONS

JULY 26, 1983

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,228,528 (110th)
MEMORY WITH REDUNDANT ROWS AND COLUMNS

Ronald P. Cenker, Coplay; Frank J. Procyk, Center Valley, both of Pa., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

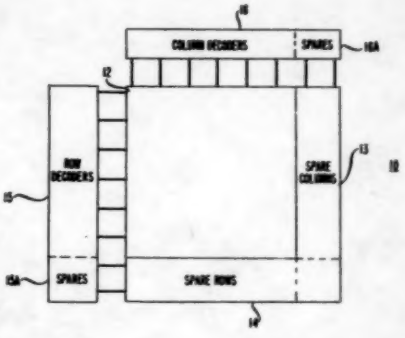
Reexamination Request No. 90/000,153, Feb. 3, 1982.
Reexamination Certificate for Patent No. 4,228,528, Oct. 14, 1980, Ser. No. 10,739, Feb. 9, 1979.
U.S. Cl. 365/200 **Int. Cl.³G11C** *13/00*

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1–6**, having been finally determined to be unpatentable, are cancelled.

New Claims **7–10** are added and determined to be patentable.

7. A semiconductor memory comprising a semiconductor chip in which the memory cells are arranged in row and column lines, each with its own decoder, and in which some of the lines form the standard memory array and in which some of the lines are initially spares to be available for substitution for lines of the standard array which include defective cells CHARACTERIZED IN THAT each of the decoders associated with a standard line comprises a parallel group of address decoding transistors, one for each digit of the address to be decoded, a drive transistor whose gate is supplied by said parallel group and whose output is connected to the associated standard line conductor, and a fusible link between the output of the drive transistor and the associated line conductor, and in which the decoder associated with each spare line comprises a plurality of decoding transistor pairs for the true and the complement of each digit of the address to be decoded, each decoding transistor



being connected between a point of reference potential and the decode node, a drive transistor whose gate is connected to the decode node, an associated spare line conductor, and a plurality of fusible links, a separete one between each decoding transistor and the decode node.

REISSUES

JULY 26, 1983

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 31,320
SELF-REGULATING HEATER

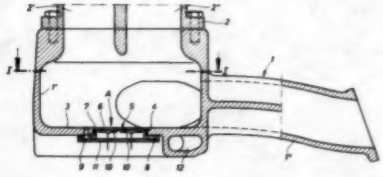
Alfred Hoser, Eitensheim, Fed. Rep. of Germany, assignor to Audi NSU Auto Union Aktiengesellschaft, Fed. Rep. of Germany

Original No. 4,242,999, dated Jan. 6, 1981, Ser. No. 774,988, Mar. 7, 1977. Application for reissue Mar. 25, 1981, Ser. No. 247,516

Claims priority, application Fed. Rep. of Germany, Jul. 1, 1976, 2629610

Int. Cl.³ F02M *31/00*

U.S. Cl. 123—549 **10 Claims**



7. A fuel entry system of an internal combustion engine, comprising a carburetor having a barrel through which fuel and air are adapted to pass, an intake manifold connected to said barrel and having a bent configuration to provide a wall substantially at right angle and opposite to said barrel, a stove disposed in said wall and offset with respect to said barrel, said stove comprising at least one self-regulating heater element having a steeply sloped positive temperature coefficient of resistivity, means to electrically connect the element to a power supply so that shortly after energization thereof the element is maintained at a preselected temperature whereby fuel droplets coming in contact with the stove will be vaporized to enhance start-up of the engine, said stove having a top plate in heat transfer relationship with said element, said top plate having a surface which faces the interior of said intake manifold and is flush with the inner surface of said wall and is provided with a multiplicity of heat conducting rods projecting from said surface into said intake manifold.

Re. 31,321
SOLAR HEATING SYSTEM

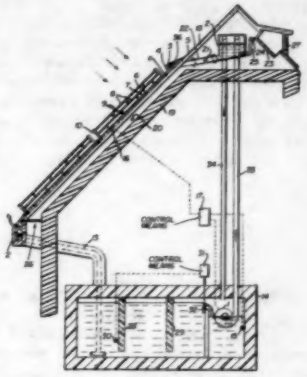
Henry Harrison, deceased, late of Locust Valley, N.Y. (by Dorothy D. Harrison, administratrix), assignor to Halm Industries Co. Inc., Glen Head, N.Y.

Original No. 4,237,863, dated Dec. 9, 1980, Ser. No. 817,335, Jul. 20, 1977. Continuation of Ser. No. 677,265, Apr. 15, 1976, abandoned. Application for reissue Jan. 22, 1981, Ser. No. 227,510

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—422 **10 Claims**

10. A solar heating system having at least one roof mounted panel for collecting heat from the sun, said panel having an upper sunlight-absorbing surface [at least one translucent cover mounted above the panel to protect it from the weather,] said panel having a lower surface of heat transfer to a stream of water, means for mounting said panel to form a passage for said stream of water, *wettable mat* means in said passage connected to said panel for maintaining said stream of water in substantially uniform contact with said lower surface of said panel, insulated tank means connected for receiving and storing said stream of water, and means for controlling said stream of water under said panel in response to the temperature of said panel and said water in said tank, whereby said water collects heat from said panel at useful temperatures, said means for maintaining said stream of



water in substantially uniform contact with said lower surface of said panel comprises a mat of wettabale fibrous material.

Re. 31,322
PROCESS FOR PRODUCING SULFUR-CURABLE ACRYLIC RUBBERS

Tetsu Ohishi, Tokyo; Kohichi Handa, Kamakura, and Haruo Ueno, Tokyo, all of Japan, assignors to Nippon Zeon Co. Ltd., Tokyo, Japan

Original No. 4,228,265, dated Oct. 14, 1980, Ser. No. 24,476, Mar. 27, 1979. Application for reissue Sep. 23, 1981, Ser. No. 304,788

Claims priority, application Japan, Mar. 27, 1978, 53-35050; Mar. 28, 1978, 53-35885

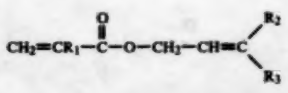
Int. Cl.³ C08F *220/40*

U.S. Cl. 526—230 **10 Claims**

1. A process for producing a sulfur-curable acrylic rubber, which comprises copolymerizing in the presence of a radical initiator

(1) 90 to 99.5% by weight of at least one alkyl acrylate with the alkyl group containing 1 to 8 carbon atoms, and

(2) 0.5 to 10% by weight of at least one monomer of the general formula



wherein R_1 represents a hydrogen atom or a methyl group, and R_2 and R_3, independently from each other, represent an alkyl group containing 1 to 3 carbon atoms.

Re. 31,323
PREPARATION OF WATER-INSOLUBLE CARBOXYMETHYL CELLULOSE ABSORBENTS

Herman L. Marder, Sommerville; Nathan D. Field, Wyckoff, both of N.J., and Makoto Shinohara, Crystal Lake, Ill., assignors to International Playtex, Inc., Stamford, Conn.

Original No. 4,200,737, dated Apr. 29, 1980, Ser. No. 906,724, May 17, 1978. Application for reissue Apr. 19, 1982, Ser. No. 369,726

Int. Cl.³ C08B *11/20*

U.S. Cl. 536—87 7 Claims

1. A process for the preparation of substantially water-insoluble, particulate carboxymethyl cellulose, which comprises treating a solid, water-soluble particulate sodium carboxymethyl cellulose having a degree of substitution of at least 0.4 with hydrogen chloride gas, and heating the carboxymethyl cellulose [at temperatures in excess of 100° C.] to convert the same to a partially acid form, cross-linked and substantially insolubilized material exhibiting a swell ratio of from 5 to 50.

Re. 31,324
FLUORINE CONTAINING ORGANOSILICON COMPOUNDS

David Apotheker, deceased, late of Wilmington, Del. (by Bank of Delaware, executor), assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

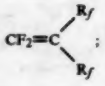
Original No. 4,308,393, dated Dec. 29, 1981, Ser. No. 195,094, Oct. 8, 1980. Application for reissue Apr. 12, 1982, Ser. No. 367,756

Int. Cl.³ C07F *7/08, 7/18*

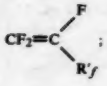
U.S. Cl. 556—445 4 Claims

1. A fluorine-containing organosilicon compound made by the addition to an organosilicon compound having at least one alkyl group attached to a silicon atom, at least one hydrogen atom being bonded to the carbon atom adjacent the silicon atom, of a fluorocompound selected from the class consisting of the following:

(A) fluoroolefins having one of the following formulas (1), (2), and (3):



(1)



(2)

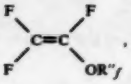
(3)

[(B) ketones having the following formula (4):]

(4)

and

(C) ethers having the following formula [(5)] *(4)*



[(5)] *(4)*

where

Each R_f independently is a C_1–C_8 saturated perfluoroalkyl;

R'_f is Br or R_f;

R''_f is R_f or a radical obtained by removing one fluorine atom from a perfluoroalkyl ether; and

m in formula (3) is an integer of 2 to 12.

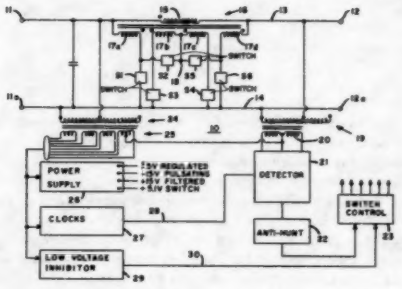
Re. 31,325
STEPPING AC LINE VOLTAGE REGULATOR

Roland L. Crapo, Bristol, Conn., assignor to The Superior Electric Company, Bristol, Conn.

Original No. 4,178,539, dated Dec. 11, 1979, Ser. No. 930,763, Aug. 3, 1978. Application for reissue Dec. 2, 1981, Ser. No. 326,580

Int. Cl.³ G05F *1/30*

U.S. Cl. 323—263 15 Claims



1. A stepping voltage regulator comprising a pair of input terminals connectable to a source of AC power, a pair of output terminals connectable to a load, a pair of lines connecting the two pair of terminals, a transformer having a secondary winding connected in series in one line and having *at least* four primary windings, a first primary winding being connected [through a first switch] *in a first series circuit* from one line *through a first switch* to the other line, a second primary winding being connected [through a second switch] *in a second series circuit* from *said* one line *through a second switch* to the other line, a third primary winding having one end connected through a third switch to the [end of] *first series circuit between* the first winding *and the first switch,* a fourth primary winding having one end connected through a fourth switch to the [end of] *second series circuit between* the second winding *and the second switch* , said one end of the third *winding* and *said one end of the* fourth [windings] *winding* having a common junction, a fifth switch connected between the other end of the third winding and the other line, a sixth switch connected between the other end of the fourth winding and the other line, [each of said windings having the same number of turns,] said first and third windings when energized inducing one direction of correcting voltage in the secondary winding and said second and fourth windings inducing the opposite direction of correcting voltage, switch control means for providing a *selected* conduction state [of only one of either] *among plural conduction states of said switches including at least* (*a*) the] first switch only, [or] (*b*) *only* the third and fifth switches simultaneously, [or] (*c*) *only* the fifth and sixth switches simultaneously, [or] (*d*) *only* the fourth and sixth switches simultaneously [or] *and* (*e*) the second switch only, and

detector means for sensing the value of the output voltage and providing a correcting signal to the switch control means to cause the switch control means to change to a different conduction state when the value of the output voltage exceeds a selected range of values.

Re. 31,326

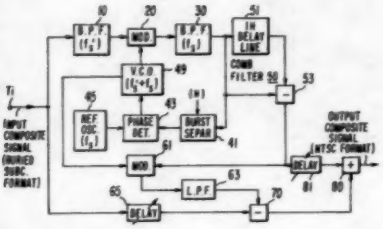
SIGNAL TRANSLATING APPARATUS FOR COMPOSITE SIGNAL SUBJECT TO JITTER

John G. Amery, Quincy, Ill., and Robert W. Jorgenson, Pasco, Wash., assignors to RCA Corporation, New York, N.Y.

Original No. 3,872,497, dated Mar. 18, 1975, Ser. No. 351,036, Apr. 13, 1973. Application for reissue Mar. 18, 1977, Ser. No. 779,009

Int. Cl.³ H04N 9/12

U.S. Cl. 358—322 **16 Claims**



16. A video processing system comprising:

a. a source of a color television signal of the form obtained by colorplexing a frequency shifted chrominance signal shifted to a lower frequency band with a luminance signal by using frequency interlacement;

b. an extracting means for extracting a signal in the lower frequency shifted chrominance signal band from said color television signal and providing the extracted signal at its output;

c. a first frequency conversion means having an output terminal for frequency converting the extracted signal in the lower frequency shifted chrominance signal band into a first signal in the chrominance signal band of a standard color television signal;

d. a first separating means connected to the output terminal of said first frequency conversion means for separating the chrominance signal from said first signal, said first separating means including a first comb filter including a oneline delay element and providing the separated chrominance signal at its output;

e. a second frequency conversion means for frequency converting the chrominance signal separated by said first separating means to the frequency band of said lower frequency shifted chrominance signal band;

f. an adding means for adding the output of said second frequency conversion means to said color television signal in opposite phase to each other so that only the lower frequency shifted chrominance signal in said color television signal is cancelled; and

g. means for mixing the output of said first separating means with the output of said adding means wherein a standard color television signal is obtained as the output of said mixing means.

Re. 31,327

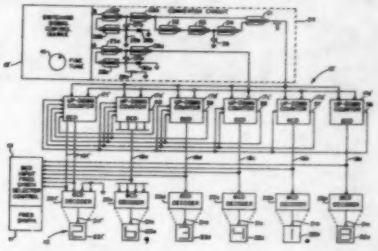
PROPORTIONAL DIGITAL CONTROL FOR RADIO FREQUENCY SYNTHESIZERS

Max E. Peterson, Richardson, Tex., assignor to Rockwell International Corporation, El Segundo, Calif.

Original No. 3,665,323, dated May 23, 1972, Ser. No. 141,895, May 10, 1971. Application for reissue Jun. 18, 1979, Ser. No. 49,868

Int. Cl.³ H03J 5/04, 5/00; H03K 21/30

U.S. Cl. 455—157 **12 Claims**



1. In a proportional digital control system using binary coded decimal control for tuning radio frequency synthesizers: a switching signal control source with reference signal pulse output means [,] *for producing a reference signal pulse waveform and* an up-down count signal pulse means *for producing an up-down count pulse waveform,* with *a change in count determined by said reference signal pulse waveform and the count direction, whether* up or down [count], determined by phase relation *of said up-down count signal pulse waveform* to [the signal pulses of] said reference signal pulse [output means] *waveform,* and means for shifting [signal pulse] *the* phase of said up-down count signal [means] *pulse waveform* relative to [the] *said* reference signal [pulses] *pulse waveform*; a circuit chain of a plurality of up-down counter to binary coded decimal output circuit units connected to receive *directly from said switching signal control source only the two said* reference signal [pulses] and *the phase shiftable* up-down count signal [pulses] *pulse waveforms,* and with carry over interconnect between adjacent digit locations of said up-down counter circuit units; a frequency synthesizer with a BCD input frequency selector control circuit connected to the BCD output of said up-down counter circuit units; and a plurality of digit display devices with BCD signal input circuit means connected individually to receive the BCD output signals of the individual up-down counter circuit units of the respective digit locations.

PLANT PATENTS

GRANTED JULY 26, 1983

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,073
ALMOND TREE ("MESA")
Leonard D. James, 4017 Tully Rd., Modesto, Calif. 95356
Filed Apr. 19, 1982, Ser. No. 369,845
Int. Cl.³ A01H 5/03
U.S. Cl. Plt.—30 1 Claim

1. A new and distinct variety of almond tree, substantially as illustrated and described, particularly characterized by a bloom-time two or three days earlier than the Mission and substantially the same as the Nonpareil, and by a harvest period about two weeks earlier than the Mission.

5,074
PLUM TREE (AP-3)
Alvin Peters, 41736 Road 62, Reedley, Calif. 93654
Filed Jan. 18, 1982, Ser. No. 340,454
Int. Cl.³ A01H 5/03
U.S. Cl. Plt.—38 1 Claim

1. A new and distinct variety of plum tree, substantially as illustrated and described, which — while otherwise most similar to the Laroda in tree and fruit characteristics — bears fruit which ripens about six to seven weeks later than the fruit of the Laroda.

5,075
WILTON PYRAMIDAL HYBRID YEW TREE
Dirk van Heiningen, 6850 Carlisle Rd., Dover, Pa. 17315
Filed Jun. 29, 1981, Ser. No. 278,085
Int. Cl.³ A01H 5/00
U.S. Cl. Plt.—50 1 Claim

1. A new and distinct variety of hybrid Yew substantially as herein shown and described, characterized particularly by it's novel shape and unique color and extent of foliage.

5,076
CHRYSANTHEMUM NAMED FIREBRAND (FP6-143-BS)
Leonard H. Shoesmith, Westfield-Woking, England, assignor to Pan American Plant Company, Parrish, Fla.
Filed Oct. 19, 1981, Ser. No. 312,887
Int. Cl.³ A01H 5/00
U.S. Cl. Plt.—74 1 Claim

1. A new and distinct spoon-tipped chrysanthemum, substantially as herein shown and described, particularly characterized by the bronze coloration of its ray florets and its floriferous and vigorous growth habit.

PATENTS

GRANTED JUL. 26, 1983

ERRATA

For CLASS	See PATENT NO.
604–067	4,394,862
604–090	4,394,863
384–092	4,395,076
525–351	4,395,501
377–015	4,395,624
382–041	4,395,697
382–027	4,395,698
382–041	4,395,699
382–027	4,395,700

PATENTS

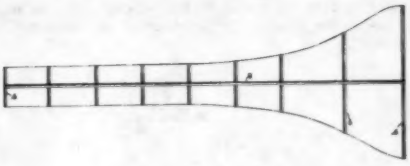
GRANTED JULY 26, 1983

GENERAL AND MECHANICAL

4,394,781
SWIMSUIT

Otto Axmann, Rheinstrasse 50, 1000 Berlin 41, Fed. Rep. of Germany

Filed Mar. 18, 1982, Ser. No. 359,600
Claims priority, application Fed. Rep. of Germany, Mar. 19, 1981, 3111280
Int. Cl.³ A41D *5/00, 9/00;* **A41C** *3/02*
U.S. Cl. 2—67 **6 Claims**

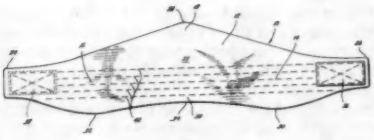


1. A swimsuit comprising a fabric covered, elastic, air-penetrable form insert including a longitudinal rib having a plurality of transverse ribs secured thereto, said insert having the shape of a substantially U-shaped clamp having two shanks, a front shank which serves to resiliently engage the pubic bone of the wearer and a rear shank of which serves to resiliently engage the coccyx of the wearer.

4,394,782
MULTI PURPOSE HEAD SWEATBAND

John J. Wasson, P.O. Box 5667, 6329 Masonic Dr., Alexandria, La. 71301

Filed Feb. 23, 1981, Ser. No. 237,205
Int. Cl.³ A42B *5/00*
U.S. Cl. 2—181 **7 Claims**



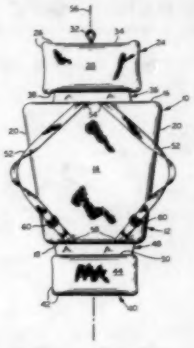
1. A head sweatband for a person to wear comprising
a cloth member for wrapping around the person's head, the cloth member having two sides, a top, a bottom, a mid-portion and two end portions, a front surface and a rear surface and
a peak formed integrally of the top of the cloth member and
two flaps, one formed integrally of each of the side portions of the cloth member at the bottom thereof, and
securing means connected to the cloth member for securing the head sweatband on the wearer's head.

4,394,783
BODY CUSHION

Elizabeth J. Simmons, 18 Norton Rd., Broad Brook, Conn. 06016

Filed Dec. 1, 1980, Ser. No. 211,702
Int. Cl.³ A47G *9/00*
U.S. Cl. 5—432 **13 Claims**

1. A body cushion comprising:
a base cushion having a generally trapezoidal shape with a top, a bottom substantially parallel to the top, a front section, a back section and nonparallel sides;
a top cushion;
a bottom cushion;
a first connector made of soft flexible material and having one end fixedly connected to the top of the base cushion and the other end attached to the top cushion;
a second connector made of soft flexible material and having one end fixedly connected to the bottom of the base cushion and the other end attached to the bottom cushion;
means for adjusting the length of the first and second connector for varying the separation between the top cushion and the base cushion and between the bottom cushion and the base cushion; and

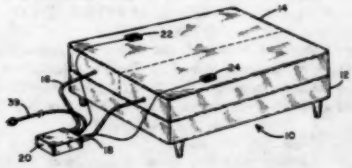


a pair of body straps each having a first end fixedly attached, in a spaced apart relationship to one another, to the top of the base cushion and each having a second end fixedly attached, in a spaced apart relationship to one another, to the bottom of the base cushion wherein the body straps are adapted for attachment around the shoulders of a person for securing the body cushion to the back of said person.

4,394,784
AIR BED WITH FIRMNESS CONTROL

Gerald R. Swenson; Emil S. Swenson, both of Coon Rapids, and Gary A. Young, Burnsville, all of Minn., assignors to Dial-A-Firm International, Inc., Burnsville, Minn.

Filed Jul. 8, 1981, Ser. No. 281,368
Int. Cl.³ A47C *27/10*
U.S. Cl. 5—453 **27 Claims**



1. An air bed system having firmness control of an air bladder confined within a mattress, comprising
(a) an air blower having an intake to atmospheric air and

having an exhaust to atmospheric air, and having a pressurized air outlet;

(b) an air line connected to said pressurized air outlet and connected to said air bladder;

(c) an air valve interposed in said air line for selectively opening and closing air flow therethrough;

(d) means for actuating said air valve for opening air flow through said air line and for energizing said air blower; and

(e) means for actuating said air valve for opening air flow through said air line and for deenergizing said air blower.

4,394,785

APPARATUS FOR CLEANING SOLDERING IRON BITS

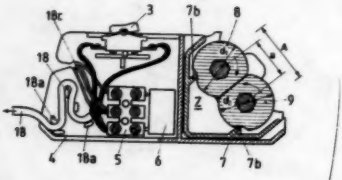
Franz Vogler, Niederrohrdorf, Switzerland, assignor to Elvo Elektronik AG, Niederrohrdorf, Switzerland

Filed Oct. 13, 1981, Ser. No. 310,777

Claims priority, application Switzerland, Mar. 6, 1981, 1524/81

Int. Cl.³ A46B *13/02*

U.S. Cl. 15—21 D **16 Claims**



1. An apparatus for mechanically cleaning hot soldering iron bits contaminated with contaminants, such as tin oxides and soldering residues, comprising:

at least two cooperating oppositely situated, counter-rotating cleaning bodies for cleaning a soldering iron bit of contaminants;

each of said cleaning bodies having a lengthwise extending axis;

means for mounting said two cleaning bodies such that the distance between said lengthwise extending axes is less than the mean diameter of said cleaning bodies, so that said cleaning bodies are continuously in mutual contact with one another at least at portions of their circumference; and

means for rotatably driving said counter-rotating cleaning bodies at different rotational speeds, whereby said mutually contacting portions of said cleaning bodies exert a kneading action upon one another and thus a self-cleaning action upon one another, to thereby ensure that during cleaning of a contaminated soldering iron bit essentially only non-contaminated portions of said counter-rotating cleaning bodies come into contact with said contaminated soldering iron bit.

4,394,786

APPARATUS FOR CLEANING AND SCALE DUST REMOVAL FROM STEEL ROD AFTER MECHANICAL DESCALING

Stanley L. Stalson, Richfield, and William H. Johns, Stow, both of Ohio, assignors to Wire Lab Company, Richfield, Ohio

Continuation-in-part of Ser. No. 152,354, May 22, 1980, abandoned. This application Mar. 9, 1982, Ser. No. 356,482

Int. Cl.³ A47L *5/38*

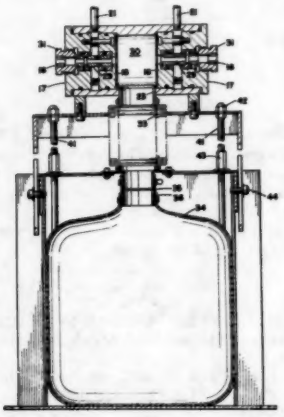
U.S. Cl. 15—306 A **5 Claims**

1. A waterless particle removing apparatus for removing scale particles from a carbon steel strand, the apparatus comprising:

a housing which defines an entrance opening, an exit opening, and a central chamber disposed in alignment along a central axis such that the strand is adapted to be moved linearly along the central axis through the entrance opening, the central chamber, and the exit opening;

a compressed air manifold for supplying air under pressure;

a tubular entrance nozzle having an entrance nozzle passage and a plurality of entrance air jet orifices, the entrance nozzle being disposed in the entrance opening with the entrance nozzle passage in alignment with the central axis, the entrance air jet orifices being disposed in fluid communication between the air manifold and the nozzle passage and being directed toward the central chamber in such a manner that a venturi effect is created drawing air from exterior of the housing, through the entrance nozzle passage where it mixes with scale particles freed from the steel strand, and into the central chamber, whereby the venturi effect prevents scale particles from escaping through the entrance nozzle passage to the exterior of the housing;



a tubular exit nozzle having an exit nozzle passage and a plurality of exit air jet orifices, the exit nozzle being disposed in the exit opening with the exit nozzle passage in alignment with the central axis, the exit air jet orifices being disposed in fluid communication between the air manifold and the exit nozzle passage and being directed toward the central chamber in such a manner that a venturi effect is created drawing air through the exit nozzle passage where it mixes with scale particles freed from the steel strand and into the central chamber, whereby the venturi effect prevents scale particles from escaping through the exit nozzle passage to the exterior of the housing; and,

a scale particle filtering device operatively connected with the central chamber for allowing scale particle free air to be returned to the exterior of the housing and collecting scale particles therein.

4,394,787

HYDRAULIC DOOR CLOSER CONSTRUCTION

Sidney Lieberman, Lancaster, Pa., assignor to Dorma Door Controls Inc., Reamstown, Pa.

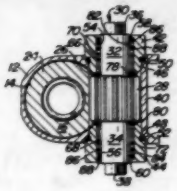
Filed Jul. 27, 1978, Ser. No. 928,403

Int. Cl.³ E05F *3/14*

U.S. Cl. 16—58 **5 Claims**

1. For use in hydraulic door closer apparatus of the type comprising a housing having a cylinder therein, a piston disposed in said cylinder, rotary output shaft means journalled in said housing, and means mechanically interconnecting said piston and said output shaft for transmitting forces to and from said piston and said output shaft, a fluid seal for said output

shaft comprising a cylindrical surface on said shaft adjacent to an end thereof, and an elongated annular chamber surrounding a portion of said surface and having a pair of axially spaced end walls, and a pair of O-ring members disposed side-by-side in



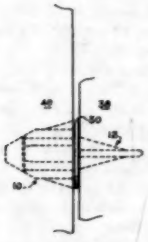
said chamber, the axial dimension of said chamber being greater than the combined axial dimension of said O-ring members, so that said O-ring members can adjust themselves axially within said chamber.

4,394,788

RATCHET BEARING FOR SHUTTER SLATS AND THE LIKE

Henry G. Kohler, and Emeric L. Major, both of San Diego, Calif., assignors to Shutter Mart of California, Inc., San Diego, Calif.

Filed Jul. 30, 1980, Ser. No. 173,571
Int. Cl.³ E05D *11/08*
U.S. Cl. 16—334 **3 Claims**



1. A ratchet bearing for rotationally mounting a first member relative to a second member and creating a plurality of detent stops throughout at least a portion of the course of relative rotational motion therebetween, said bearing comprising:

(a) a trunnion pin element having one end engageable in a first member and a projection portion defining a generally cylindrical surface;

(b) a bearing collar element with an internal surface at least in part engaged on said cylindrical surface and having means to engage said bearing element in a second member;

(c) said surfaces each defining unitary high and low portions when angularly traversed and at least one of said surfaces being at least in part biased against the other of said surfaces, whereby mutual rotation of said two elements about the axis of said generally cylindrical surface causes successive detention of one element relative to the other element;

(d) one of said surfaces, defining a multiplicity of consecutive longitudinal ribs of the other of said surfaces defines a plurality of detents engaging between consecutive adjacent pairs of said ribs as said elements are mutually rotated causing successive detention of one element relative to the other; and

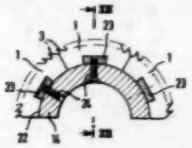
(e) said trunnion pin has at the end thereof opposite said engageable end a tapered tip expanding to a circular shoulder adjacent said cylindrical surface said shoulder being of diameter greater than that of the smallest inside diameter of said internal surface whereby said collar can be retained by said shoulder on said trunnion pin.

4,394,789

TOOTHED EDGING MEANS FOR TEXTILE MACHINERY

Josef Egerer, Schwabach, Fed. Rep. of Germany, assignor to Staedtler & Uhl, Schwabach, Fed. Rep. of Germany

Filed Feb. 20, 1981, Ser. No. 236,398
Claims priority, application Fed. Rep. of Germany, Feb. 27, 1980, 3007245
Int. Cl.³ D01G *15/84*
U.S. Cl. 19—97 **8 Claims**



1. Toothed edging apparatus for mounting on a rotatable support element of a textile machine comprising tooth segments each having a plurality of teeth elements arranged generally along an arc, each of said segments being formed as a stamped sheet metal element, each of said segments having a foot portion from which said teeth elements extend, mounting means mounting said foot portion on said rotatable support element of said textile machine, said mounting means comprising a dovetail male element on said support element of said textile machine and a mating dovetail female groove in said foot portion, said dovetail male element having a longitudinal axis extending parallel to the axis of rotation of said rotatable support element, said tooth segments being insertable on said support element by being slid longitudinally along the axis of said support element as said male and female dovetail elements are engaged, and fastening means detachably fastening said dovetail male element on said support element of said textile machine, said dovetail male element having a radial inner face having a partial cylindrical surface, said support element of said textile machine also having at least a partial cylindrical surface corresponding to the cylindrical surface of said dovetail male element, said fastening means comprising threaded element extending between said dovetail male element and said support element to thereby threadedly connect said dovetail male element to said support element as said cylindrical surface of said dovetail male element engages said corresponding cylindrical surface of said support element.

4,394,790

FIBER FEEDING APPARATUS WITH CONTROLLED AIR FLOW

Alex J. Keller, Clover, S.C., and Akiva Pinto, Gastonia, N.C., assignors to Automatic Material Handling, Inc., Bessemer City, N.C.

Filed Dec. 30, 1981, Ser. No. 336,016
Int. Cl.³ D01E *15/40*
U.S. Cl. 19—105 **10 Claims**

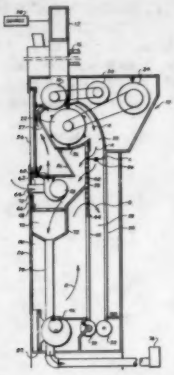
10. Apparatus for feeding fibers to textile processing equipment such as a carding machine, said apparatus including:

(a) an axially extending opening roller;

(b) a substantially enclosed fiber collecting chute means extending generally downwardly beneath said opening roller to receive fibers therefrom, said chute means including a generally vertically extending wall having an upper portion formed with perforations and having a lower portion arranged for oscillating movement for densifying

the fiber in said chute means during movement in one direction; and

(e) a closed compartment adjacent said chute means and separated therefrom by at least a portion of said perforated



wall portion and by said oscillating wall portion, whereby movement of said oscillating wall portion in the other direction thereof will cause air to be forced into said chute means through said perforated wall portion.

4,394,791

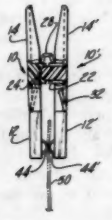
CLOSURE CLAMP FOR FOOD BAGS

Francis R. Groth, 12561 Glenfield, Detroit, Mich. 48213

Filed May 26, 1981, Ser. No. 267,128

Int. Cl.³ B65D 77/10

U.S. Cl. 24—30.5 R **5 Claims**



1. A clamp for closing food bags and the like comprising,

a pair of clamp members,

each clamp member including a bar-like jaw which is wide relative to its depth and a bar-like handle which is long relative to its width,

each of said jaws defining a channel extending the width thereof, a tube of pliable material coextensive with said channel and seated in said channel with a circumferential portion thereof extending outside the channel,

each of said handles extending transversely from said jaw and terminating in a free end with a fulcrum means on the handle,

said jaws being of equal length and said handles being of equal length,

said clamp members being disposed with the fulcrum means of one clamp member in pivotal engagement with the fulcrum means of the other clamp member with said jaws, tubes and handles respectively opposite each other,

said fulcrum means and said tubes holding the jaws and handles in spaced relation with clearance space between the jaws throughout the depth thereof to receive the end of a bag,

and a torsion spring having a torsion rod disposed between said fulcrum means and the free ends of said handles with the free ends of the spring engaging the handles at the juncture thereof with the jaws and being adatped to hold said fulcrum means together and to urge said jaws closed, whereby said tubes are adapted to grippingly engage a bag along the full width of said jaws.

4,394,792

BUCKLE FOR A SAFETY BELT

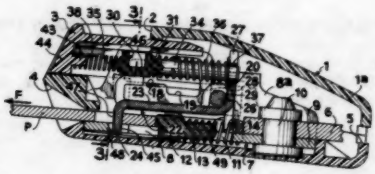
Yves Schmidt, Audincourt, France, assignor to Aciers et Outillage Peugeot, Audincourt, France

Filed May 13, 1981, Ser. No. 263,249

Claims priority, application France, May 14, 1980, 80 10827

Int. Cl.³ A44B 11/25

U.S. Cl. 24—230 A **10 Claims**



1. In a safety belt buckle for attaching a portion of a safety belt to retaining means by means of a tongue member forming a latch which is fixed to said portion of the safety belt to be attached, said buckle comprising a support for fixing to the retaining means and defining a rectilinear passage in which the latch may be inserted and which defines a sliding plane for the latch, locking means for locking the latch which are mounted on the support to pivot about an axis which extends in a direction parallel to the plane of the passage and which define at least a first abutment surface for retaining the latch and extending in a direction perpendicular to the plane of the passage and transversely in the passage in a locked position of the buckle, stop means, means for mounting the stop means on the support so that the stop means are movable in translation in the support in a direction perpendicular to said pivot axis of the locking means, the stop means being cooperative with the locking means for stopping the locking means from releasing the latch in one position of the stop means and releasing the locking means in another position of the stop means when opening the buckle, the locking means defining at least a second abutment surface for coming in contact with the stop means in said locked position of the buckle, an operating knob for opening the buckle and mounted relative to the support so as to be movable in the same direction as the stop means, the buckle further comprising return springs for respectively acting on the stop means and the locking means and the operating knob; the improvement wherein said stop means comprise a body which is in a single piece and defines guiding and maintaining means for said springs, said guiding and maintaining means extending from opposite sides of said body in a direction perpendicular to said pivot axis of the locking means, and said means for mounting the stop means on the support comprise two opposed slide portions of said body which extend in directions transverse to said direction in which the stop means are movable in the support, and two opposed openings defined by the support, into which openings said slide portions respectively extend, each of said openings having a first part for guidingly engaging said slide portions in operation of the buckle and a second part for allowing engagement of said slide portions in said openings when initially assembling the buckle.

4,394,793

ROLL FOR USE IN CALENDERS OR THE LIKE

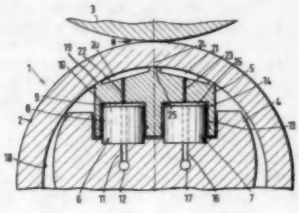
Josef Pav, and Erhard Münch, both of Krefeld, Fed. Rep. of Germany, assignors to Kleinewefers GmbH, Krefeld, Fed. Rep. of Germany

Filed Jun. 3, 1981, Ser. No. 269,986

Claims priority, application Fed. Rep. of Germany, Jun. 14, 1980, 3022491

Int. Cl.³ B21B 13/14, 29/00

U.S. Cl. 29—116 AD 22 Claims



1. A roll, particularly for use in calenders or like machines, comprising an elongated carrier; a hollow cylindrical rotary shell spacedly surrounding said carrier and having a cylindrical internal surface; bearing elements forming a row extending in parallelism with the axis of said shell and being interposed between said shell and said carrier in the interior of said shell, each of said bearing elements having a convex surface adjacent to said internal surface and each of said convex surfaces having a plurality of pockets; and a plurality of fluid-operated pressure generating devices interposed between each of said bearing elements and said carrier to urge the convex surfaces of said bearing elements toward said internal surface, each of said pressure generating devices defining a plenum chamber for pressurized fluid and each of said bearing elements having means for admitting pressurized fluid into the respective pockets from more than one plenum chamber, the pressure generating devices of each of said pluralities forming a row, as considered in the circumferential direction of said shell.

4,394,794

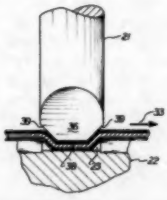
METAL FASTENING SYSTEM AND METHOD

Richard Shirey, Avon, Ohio, assignor to Donn Incorporated, Westlake, Ohio

Filed Jan. 19, 1981, Ser. No. 226,385

Int. Cl.³ B23P 11/00, 17/00

U.S. Cl. 29—432 15 Claims



1. A die set for fastening two or more sheets of metal or the like together comprising a die and a mating punch, said die providing an elongated die cavity having a pair of opposed cutting edges at the entrance of said cavity, said cutting edges being contained within a single plane, said cavity being defined at least in part by opposed side walls and a back wall, said cavity having a lateral width back from said cutting edges greater than the spacing of said cutting edges, said cutting edges and cavity walls being fixed against relative movement, said punch having a working portion proportioned to cooperate with said die to cut a ribbon from said sheets, to displace said ribbon to one side of said sheet into said cavity and to deform said ribbon to increased width to prevent separation of said sheets, said cavity being shaped with increasing dimensions in one longitudinal direction to allow release of said ribbon from said cavity by relative longitudinal movement in said one direction.

13. A method of connecting a plurality of sheets comprising positioning said sheets in face-to-face contact adjacent to an elongated die cavity having side walls which diverge as they extend from the cavity entrance to a back wall said walls being fixed against relative movement, shearing superposed ribbon portions from each sheet into said cavity, moving said portions to one side of said sheets to form an opening in said sheets and to position said portions in said die cavity against said back wall, deforming said portion within said die cavity to a size preventing return movement thereof through said opening, releasing said deformed portions from said die cavity by relative movement therebetween in a direction lengthwise thereof, and forming said die cavity with increased cross section in said one direction lengthwise thereof so that longitudinal movement in said one direction causes an immediate release of substantial frictional contact between said portions and the walls of said cavity.

4,394,795

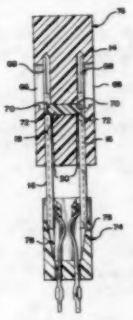
CONNECTOR INSERTION TOOL

Ralph R. Goss, Hershey, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed May 13, 1981, Ser. No. 263,377

Int. Cl.³ H05K 3/30

U.S. Cl. 29—739 1 Claim



1. A tool for mounting a connector having depending contact pins into a printed circuit board, said tool comprising:

a. a housing having a slot extending longitudinally therethrough and two spaced apart rows of a plurality of spaced apart apertures extending vertically from above the slot to the underside of the housing with the apertures intersecting the slot;

b. a plurality of channel-shaped push pins having an arcuate-shaped notch adjacent an upper end and positioned in the apertures with the lower ends extending below the housing for insertion into a connector to engage contacts therein; and

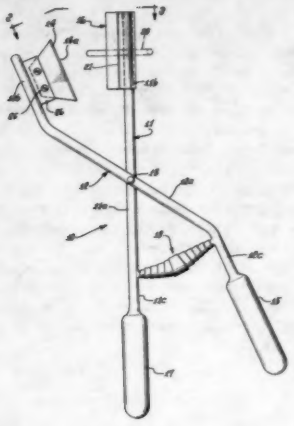
c. a bar having rounded edges positioned in the slot and passing through the arcuate-shaped notches in the push pins to retain the pins in the apertures and further to permit the pins to pivot laterally.

4,394,796

VEGETATION STEM CUTTING APPARATUS

Brian A. Winer, P.O. Box 13 - Gallo Manor, Johannesburg 2052, South Africa

Filed Jun. 29, 1981, Ser. No. 278,043
Int. Cl.³ A01G 3/00
U.S. Cl. 30—178 8 Claims



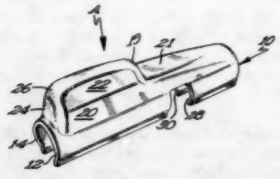
1. Vegetation stem cutting apparatus comprising
(a) elongated tongs which are interconnected at a pivot,
(b) a table carried by one tong proximate the end thereof,
(c) and a thin knife carried by the other tong to close toward the table when the tongs are pivoted to cut the stem placed on the table,
(d) the knife extending at a substantial angle relative to a normal to the table when the knife edge is closed into proximity to the table,
(e) the thin knife defining a first plane, and the table surface defines a second plane, said planes intersecting non-perpendicularly when the knife edge is closed into proximity to the table, the direction of relative closing of the thin knife toward the table surface being angularity offset at an angle β from a perpendicular to said surface,
(f) and a shallow groove in said surface to receive only an edge portion defined by the blade.

4,394,797

COVER FOR A RIFLE SIGHT

Ronald D. Schuster, P.O. Box 92, Claremont, Minn. 55924

Filed Dec. 28, 1981, Ser. No. 334,583
Int. Cl.³ F41G 1/04
U.S. Cl. 33—244 1 Claim



1. One piece cover for a barrel-mounted gun sight for allowing the gun to be slipped into and out of a gun case without the gun sight tearing the inside of the gun case comprising, in combination: a substantially hollow elongated body open at the bottom including: a first lowermost wall portion arcuately formed transversely of the elongated body having a first end, a second end, a top edge, and a bottom edge; a second lowermost wall portion arcuately formed transversely of the elongated body having a first end, a second end, a top edge and a bottom edge; a first flat upper elongated sidewall portion having a bottom edge integrally formed with the top edge of the first lowermost wall portion, a top edge, a first end, and a second end, with the distance between the first end and the second end of the first flat upper elongated sidewall portion being less than the distance between the first end and the second end of the first lowermost wall portion; a second flat upper elongated sidewall portion having a bottom edge integrally formed with the top edge of the second lowermost wall portion, a top edge, a first end, and a second end, with the distance between the first end and the second end of the second flat upper elongated sidewall portion being less than the distance between the first end and the second end of the second lowermost wall portion; a first forward wall portion having a top edge, a bottom edge, a first end, and a second end, with the bottom edge of the first forward wall portion being attached to the top edge of the first flat upper elongated sidewall portion and disposed angularly inwardly of the vertical axis of the elongated body, with the distance between the first end and the second end of the first forward wall portion being generally equal to the distance between the first end and the second end of the first flat upper elongated sidewall portion; a second forward wall portion having a top edge, a bottom edge, a first end, and a second end, with the bottom edge of the second forward wall portion being attached to the top edge of the second flat upper elongated sidewall portion and disposed angularly inwardly of the vertical axis of the elongated body, with the distance between the first end and the second end of the second forward wall portion being generally equal to the distance between the first end and the second end of the second flat upper elongated sidewall portion, with the top edge of the first forward wall portion being attached to the top edge of the second forward wall portion; a first end wall, with the first ends of the first flat upper elongated sidewall portion, the second flat upper elongated sidewall portion, the first forward wall portion, and the second flat forward wall portion being attached to the first end wall along an arcuate portion; a top portion having a first end, a second end, a first edge, and a second edge, with the first edge being attached to the top edge of the first lowermost wall portion, with the second edge of the top portion being attached to the top edge of the second lowermost wall portion, with the first end of the top portion being generally co-planar with the second ends of the first and second lowermost wall portions; a second end wall having an arcuate shape, with the second ends of the first flat upper elongated sidewall portion, the second flat upper elongated sidewall portion, the first forward wall portion, the second forward wall portion, and the top portion being attached to the second end wall; a first notch formed in the first lowermost wall portion between the first and second ends of the top portion; a second notch formed in the second lowermost wall portion between the first and second ends of the top portion, with the first and second lowermost wall portions being spaced for clamping engagement of the gun barrel, with the first and second notches allowing positioning on a ring formed on the gun barrel and for prohibiting the elongated body from sliding on the gun barrel.

4,394,798

WHEEL ALIGNMENT MEASURING APPARATUS

Osmond Beissbarth, Sulzbacher Str. 15, 8000 München 40, Fed. Rep. of Germany

Filed May 19, 1981, Ser. No. 265,126
Claims priority, application Fed. Rep. of Germany, Jun. 12, 1980, 3022073
Int. Cl.³ G01B 7/315
U.S. Cl. 33—335 19 Claims

1. A wheel alignment measuring apparatus for a vehicle having a nearside front wheel and an offside front wheel, said apparatus being operable to produce, in one operation, read-

ings for the steering difference angle, the caster and the king pin angles, said apparatus comprising,

a first angle measuring instrument including means for providing a first output signal representative of the steering angle of the nearside front wheel,

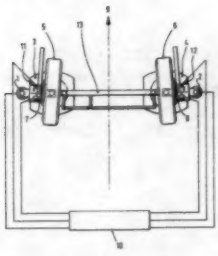
a second angle measuring instrument including means for providing a second output signal representative of the steering angle of the offside front wheel,

a third angle measuring instrument including means for providing a third output signal representative of the inclination of the nearside front wheel in a plane of motion which is substantially normal to the length direction of the vehicle when the wheels are in a straight ahead position,

a fourth angle measuring instrument including means for providing a fourth output signal representative of the inclination of the offside front wheel in a plane of motion which is substantially normal to the length direction of the vehicle when the wheels are in a straight ahead position,

a fifth angle measuring instrument including means for providing a fifth output signal representative of the inclination of the nearside front wheel in a plane of motion which is substantially parallel to the length direction of the vehicle when the wheels are in a straight ahead position,

a sixth angle measuring instrument including means for providing a sixth output signal representative of the inclination of the offside front wheel in a plane of motion which is substantially parallel to the length direction of the vehicle when the wheels are in a straight ahead position,



a signal processing means for receiving said output signals and performing the following functions:

(a) calculating the steering difference angle from the output signals of the first and second angle measuring instruments;

(b) calculating the caster of the nearside front wheel from changes which occur in the output signals of the first and third angle measuring instruments as a result of steering motion of the nearside front wheel;

(c) calculating the caster of the offside front wheel from changes which occur in the output signals of the second and fourth angle measuring instruments as a result of steering motion of the offside front wheel,

(d) calculating the king pin angles of the nearside front wheel from changes which occur in the output signals of the first and fifth angle measuring instruments as a result of steering motion of the nearside front wheel;

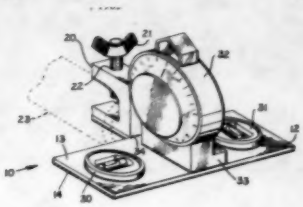
(e) calculating the king pin angles of the offside front wheel from changes which occur in the output signals of the second and sixth angle measuring instruments as a result of steering motion of the offside front wheel.

4,394,799

CONDUIT BENDING PLANE INDICATOR

Elwood D. Moree, Rte. 1, Vienna, Ga. 31092, and Dennis C. Snowden, 740M Muckalee Creek Rd., Leesburg, Ga. 31763

Filed Aug. 31, 1981, Ser. No. 298,205
Int. Cl.³ G01C 9/00
U.S. Cl. 33—343 **9 Claims**



1. An apparatus for insuring coplanar bends in conduit, comprising:

a base member;

fastening means attached to said base member for rigidly fastening said base member to a section of conduit to be bent;

first plane indicating means attached to said base member for providing an indication that a bend in the conduit is substantially planar in a first plane;

second plane indicating means attached to said base member for providing an indication that a bend in the conduit is substantially planar in a second plane orthogonal to said first plane;

gravity sensitive angle indicating means attached to said base member for providing an indication of the angle of a bend in the conduit; and

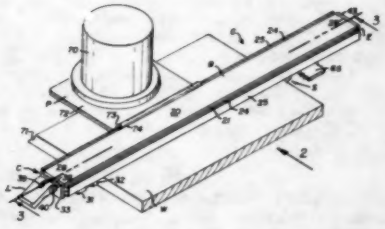
detachable attachment means for detachably attaching said angle indicating means to said base member and allowing said angle indicating means to rotate on said base member.

4,394,800

GUIDE CLAMP

Norman Griset, 380 Jennifer La., Orange, Calif. 92669

Filed Dec. 3, 1981, Ser. No. 326,840
Int. Cl.³ B43L 13/02
U.S. Cl. 33—443 **17 Claims**



1. A guide clamp adapted to grip a workpiece between opposing jaw faces, comprising:

(a) a bar having guideway means along the reach thereof;

(b) a clamp jaw at one end of the bar having a jaw face facing towards the bar and a lever means adapted to be actuated to exert a pull in a direction away from the bar;

(c) a shifting jaw carried on the guideway means, having a jaw face facing the clamp jaw and being shiftable along the bar to space the jaw faces to embrace a workpiece between them;

(d) a pull rod extended alongside the bar with one end being attached to the lever means to be pulled thereby; and,

(e) a lock means at the shifting jaw connecting with the pull rod to normally slide along the pull rod as the shifting jaw is moved along the bar but to lock onto the pull rod when a workpiece is embraced by the jaws whereby actuation of the lever means to pull the rod moves the jaws together to grip the workpiece.

4,394,801

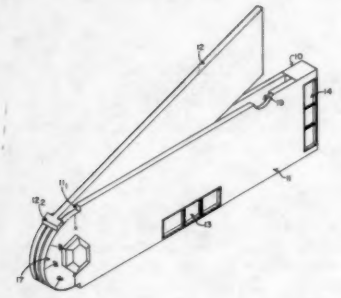
MULTIFUNCTION, MULTIPURPOSE CONSTRUCTION TOOL

Francis Thibodeaux, Rte. 1, Box 125, Krotz Springs, La. 70750

Filed May 12, 1981, Ser. No. 262,998

Int. Cl.³ B43L 7/06

U.S. Cl. 33—496 **8 Claims**



1. In apparatus characterized as a multifunction, multipurpose tool for use in the construction trades, which includes in combination

a pair of operating arms having rounded terminal ends, the arms being pivotally connected via an axis through said rounded terminal ends one to the other,

an angle indicator provided at the pivotal connection for reading the angular relationship between said pair of arms, the improvement comprising,

on a first arm

an angular scale of indicia marks located on the outer surface of the outermost rounded end of said arm outboard of the pivotal axis through which said pair of arms are adjoined,

a pair of alternately disposed abuttments located at the extremities defining the rounded end of said arm, the abuttments further defining the beginning and end of said scale of angular component values, and

on the second arm

a stop located on an outer edge of the rounded terminal end of said arm movable in unison therewith for indexing the scale of angular values between the alternately disposed abuttments.

4,394,802

COUNTER-CONVECTION VAPOR CONTROL SYSTEM

Donald J. Spigarelli, Carlisle, Mass., assignor to The HTC Corporation, Concord, Mass.

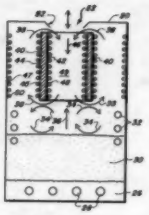
Filed Apr. 24, 1981, Ser. No. 257,141

Int. Cl.³ F26B 3/04

U.S. Cl. 34—27 **17 Claims**

1. For use in a vapor phase processing system having a vessel having top walls containing a vapor in a processing vapor zone and a central opening in the vessel top walls by which a work product is introduced into and removed from the processing vapor zone and through which the vapor in the processing vapor zone tends to upwardly flow by convection, a counter-convection vapor flow system comprising:

a structure disposed in association with the vessel and having one or more first surfaces for forming a vertically oriented central channel in the vessel in communication with said opening and having one or more second surfaces for forming with said top walls a peripheral space in the vessel substantially not in communication with said opening; and



means associated with said structure for providing a temperature differential in the vessel to cause a flow of the vapor in the vessel which is upward in the peripheral space and downward in the central channel, said downward flow providing a counter-convection flow which opposes the upward flow of vapor from the processing vapor zone toward the vessel opening.

4,394,803

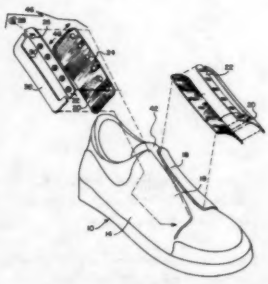
ELASTICIZED OVERLAY

Samuel A. Goldstein, Newtown Square, Pa., assignor to Polsam, Inc., Newtown Square, Pa.

Filed Jun. 10, 1981, Ser. No. 272,284

Int. Cl.³ A43B 11/00; A43C 7/06

U.S. Cl. 36—51 **12 Claims**



1. In a shoe having an upper of the blucher construction type adapted to be secured to the foot of the wearer by a shoe lace, the combination of

a modified blucher construction, said modified blucher construction having no lacing openings therethrough, the blucher construction defining a longitudinal blucher opening therebetween;

a blucher overlay assembly means affixed to the blucher construction and defining an overlay opening in registry above the blucher opening,

said blucher overlay assembly means comprising an elasticized fabric and a plurality of eyelets therein for receiving portions of the lace therethrough,

the fabric having a connected longitudinal edge and a free longitudinal edge, the connected edge being secured to the modified blucher construction and the eyelets being secured in the said free edge,

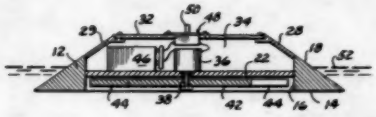
whereby the fabric can be tensioned by the shoe lace.

4,394,804

ROTOR DRIVEN BUOYANT TOY

Nilson V. Ortiz, 2911 16th St. #210, San Francisco, Calif. 94103

Filed Nov. 12, 1981, Ser. No. 320,817
Int. Cl.³ A63H 23/04
U.S. Cl. 46—250 3 Claims



1. A floatable toy simulating a space saucer for placement in and movement in water, comprising:

an endless ring body having a planar horizontal bottom surface and an inner peripheral surface normal to its bottom surface;

a hollow housing extending diametrically across and projecting above said body,

said housing having a horizontal bottom wall secured to said inner peripheral surface in upwardly spaced relation with respect to said body bottom surface;

motor means within said housing including a reversible motor having a drive shaft projecting downwardly through said housing bottom wall;

a reversing switch mounted on said housing and having a control button projecting above the upper limit of said housing;

a battery within said housing and operatively connected with said motor through said switch; and,

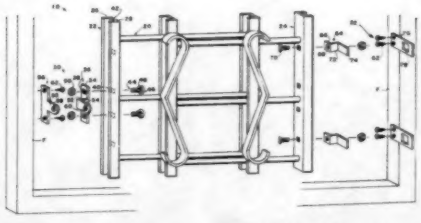
paddle wheel means axially secured to said drive shaft and loosely received by the inner peripheral surface of said body for moving said toy.

4,394,805

ESCAPABLE-WINDOW-SECURITY-GUARD SYSTEM

Roger L. Napper, 2064 Rainier Ave., Bel Air, Md. 21014

Filed Apr. 24, 1981, Ser. No. 257,331
Int. Cl.³ E06B 3/68
U.S. Cl. 49—55 4 Claims



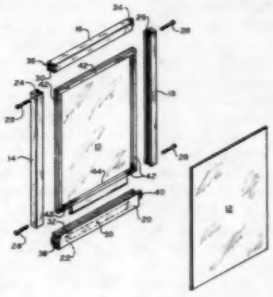
1. In a system having means for hinging and locking grills over openings at window frames and the like, the improvement comprising: the means for hinging having means for fastening a said grill to a window frame, including means for freeing a said grill from a window frame on hingedly pivoting a grill to an open position relative to a window frame; the means for locking having respective means for attachment to a window frame and to a said grill; means for protecting all said fastening means from tampering when a said grill is hinged and locked to a window frame; said means for hinging including: a plurality of hinge hooks, said means protecting including each hinge hook having a first portion proportioned for fitting a recess in a side of a said grill, a second portion extending at an angle from the first portion and a third portion extending from the second portion in a direction generally parallel with the first portion, means for fastening each hinge hook to a said grill; a respective hinge catch plate for each hinge hook, means for fastening, each hinge catch plate to a said window frame, each said hinge hook third portion passing through a slot in a hinge catch plate with the hinge catch plate covering the hinge hook fastening means and the hinge hook covering the hinge catch plate fastening means, and the means for freeing further including each hinge hook third portion proportioned for free withdrawal from a said hinge catch plate when a said grill is at said open position.

4,394,806

MULTIPLE PANE INSULATING STRUCTURE HAVING MEANS FOR REMOVING MOISTURE BETWEEN FACING SURFACES THEREOF

Ralph K. Day, 307 W. Harrison Ave., Maumee, Ohio 43537

Filed Sep. 8, 1980, Ser. No. 185,291
Int. Cl.³ E06B 7/12
U.S. Cl. 52—172 2 Claims



1. A multiple-glazed window structure comprising:

at least two substantially parallel and spaced apart panes having an outer periphery defined by the outer marginal edges of said panes;

an impervious gasket means disposed between the facing surfaces of said panes, said impervious gasket means extending along only a portion of the outer periphery of said panes and having spaced apart end portions defining the remaining portion of the outer periphery;

a pervious gasket means disposed between the facing surfaces of said panes and extending between the ends of said impervious gasket means along the remaining portion of the outer periphery of said panes, said pervious gasket means and said impervious gasket means cooperating to define a chamber between said panes;

an impervious flexing container positioned along the outer periphery of said panes adjacent said pervious gasket means, said container having an interior in fluid communication with said chamber through said pervious gasket means;

a desiccant within the interior of said flexible container; and

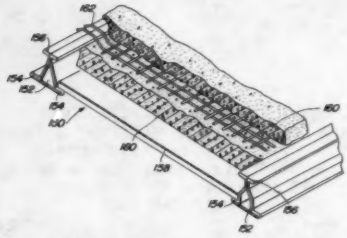
frame members supporting said panes and compressing said impervious and said pervious gasket means between said panes; said impervious gasket means, said container, and said panes defining a closed zone generally impervious to the ambient atmosphere.

4,394,807

SHEET METAL STRUCTURAL SHAPE

Frank E. Carroll, 237 Maple Rd., Barrington, Ill. 60010

Continuation-in-part of Ser. No. 943,866, Sep. 19, 1978, which is a continuation-in-part of Ser. No. 762,778, Jan. 25, 1977, Pat. No. 4,114,335, which is a continuation-in-part of Ser. No. 648,500, Jan. 12, 1976, Pat. No. 4,048,777, which is a continuation-in-part of Ser. No. 457,996, Apr. 4, 1974, Pat. No. 3,965,641. This application Mar. 20, 1981, Ser. No. 245,902
The portion of the term of this patent subsequent to Sep. 20, 1994, has been disclaimed.
Int. Cl.³ E04C 1/00
U.S. Cl. 52—332 18 Claims



1. A rollformed sheet metal structural shape fabricated from a single sheet of metal for use in building construction, said shape being substantially symmetrical about a vertical bisecting plane, said shape comprising

two symmetrical legs extending from a point in said plane at the top of said shape downwardly, said legs extending away from said plane forming an included angle of about 30° to about 90° between said legs, said legs having a vertical height of about 1¼ to about 10 inches;

a mounting flange generally perpendicular to said plane extending outwardly from the lower extremity of each of said legs;

a stiffening flange generally perpendicular to said plane extending outwardly from each of said legs at said point; said stiffening flanges being narrower than the distance between the outer extremity of said mounting flanges and having a projection extending from the outer extremity of at least one of said stiffening flange(s) for increased stiffness; and

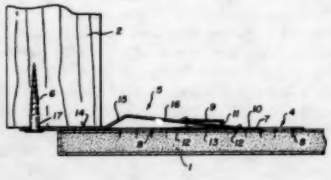
a closure extending across the bottom of said shape from the outer extremity of each of said mounting flanges.

4,394,808

FASTENER FOR ATTACHING PANEL TO STUD

Stanley E. Thorsell, Edmonton, Canada, assignor to Robert S. Agar, Inc.; Thorsell Holdings Ltd. and Mudlake Holdings Ltd., all of, Canada

Filed Nov. 25, 1980, Ser. No. 210,179
Int. Cl.³ E04H 1/00; E04B 5/52
U.S. Cl. 52—483 1 Claim



1. In combination:

a gypsum board panel having attached thereto adjacent a side edge thereof at least one gang nail plate, said plate having tangs extending from the inner face thereof and being embedded in the panel, said plate further having a transverse slot member extending outwardly from the outer face thereof, said slot member forming a clip-receiving slot extending in a generally horizontal direction;

a stiff, resilient clip, said clip comprising

a first end portion which lies generally flat against the panel and extends beyond the latter's side edge.

a second end portion which is upwardly and angularly disposed away from the panel, the end of said second end portion being wedged in the slot,

and a central portion extending upwardly and angularly from the panel and connecting said end portions, said second end portion and central portion combining to provide a V-shaped configuration with the apex directed away from the panel;

said first end portion forming an aperture in the section extending beyond the panel side edge;

a support member;

and means extending through the aperture into the support member to tie the clip and support member together;

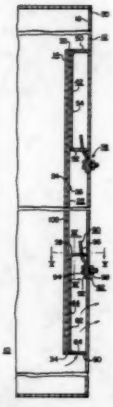
whereby the clip wedges against the transverse slot member and thus the plate and clip remain tight together and provide, in conjunction with the tie means, a firm connection between the panel and support member.

4,394,809

CORELESS HUNG PANEL ASSEMBLY

Edward F. Sherwood, Gettysburg, and Karl B. Orndorff, Bonneauville Boro, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 1, 1981, Ser. No. 269,136
Int. Cl.³ E04C 2/08
U.S. Cl. 52—512 2 Claims



1. A coreless, fireproof, hung panel assembly including a panel member which is disposed against, and which extends outwardly from, a wall surface, comprising:

a metallic panel member having top and bottom edges, first and second side edges, first and second major, parallel opposed sides, and first, second, third and fourth outer corners;

a plurality of metallic rib members fixed to, and extending outwardly from, the second major side of said panel member to stiffen as well as give depth to the resulting panel assembly said plurality of rib members including first and second horizontally oriented, elongated channel members, each of which have first and second leg portions and a connecting bight portion, with their bight portions being fixed to the second major side such that said first and

second channel members extend horizontally across the second side, immediately adjacent to the top and bottom edges, respectively, of the panel member, said first and second leg portions of the first and second horizontally oriented channel members extending outwardly by a predetermined dimension to function as top and bottom edges, respectively, of the resulting panel assembly;

a wall defining a flat surface;

and at least first, second, third and fourth support members of like construction fixed to said wall, each of said support members including an upstanding metallic tab portion which angles outwardly at a predetermined small angle from said wall;

said second leg portion of the first channel member having first and second elongated openings adjacent to the first and second outer corners, respectively, of the metallic panel member;

said first leg portion of the second channel member having first and second elongated openings adjacent to the third and fourth outer corners, respectively, of the metallic panel member;

said elongated openings being spaced inwardly by a predetermined dimension from the extreme ends of their associated outwardly extending leg portions;

said metallic tab portions of the first and second support members extending through the first and second elongated openings of the first channel member, and said metallic tab portions of the third and fourth support members extending through the first and second elongated openings of the second channel member;

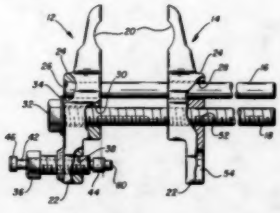
wherein the predetermined dimension of the first and second leg portions of the first and second channel members, respectively, the predetermined angle between the tab portions and said wall, and the predetermined spacing between the elongated openings in the first and second channel members and the ends of their associated leg portions, are all selected such that said tab portions are flexed slightly outward by the weight of the resulting panel assembly when the ends of at least the first and second leg portions of the first and second channel members are cammed tightly against the wall surface via the angled metallic tab portions, to resiliently force the first, second, third and fourth corners of the metallic panel member tightly against said wall surface to assure flatness of said panel member.

4,394,810

CHAIN LINK REPAIR DEVICE

Larry E. Womble, 1400 Hardisty Rd., Bedford, Tex. 76021

Filed Nov. 17, 1980, Ser. No. 207,210
Int. Cl.³ B21L *21/00*
U.S. Cl. 59—7 **5 Claims**



1. A chain link repair device for the repair or replacement of roller members of a roller drive chain comprising:

(a) A pair of jaw-heads,

(b) An elongated frame for the jaw-heads formed by means of a plurality of guide rods and at least one actuator screw all of which connect the jaw-heads with one another,

(c) Means for securing the guide rods in rigid relationship with one of the jaw-heads while maintaining the other jaw-head in sliding relationship with the said plurality of guide rods,

(d) Means for forcing the said jaw-heads towards each other when the actuator screw is rotated in a clockwise direction,

(e) Engagement surfaces extending in a direction perpendicular to the guide rods and suitable for insertion between the links of a roller chain and engaging the rollers thereof,

(f) A flange extending out of each of the said jaw-heads in a direction perpendicular to the said guide rods,

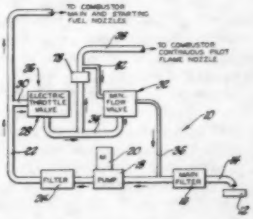
(g) Impact Means provided on said flanges for transmitting a blow to drive a pin out of any of the rollers of the said roller chain.

4,394,811

FUEL CONTROL FOR GAS TURBINE WITH CONTINUOUS PILOT FLAME

Robert M. Swick, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Jun. 22, 1981, Ser. No. 275,785
Int. Cl.³ F02C *9/38*
U.S. Cl. 60—39.28 R **4 Claims**

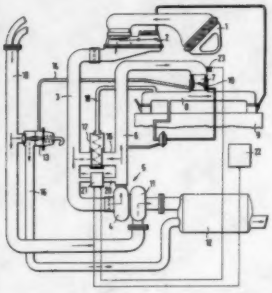


1. In a fuel system for a gas turbine engine of the type having a main nozzle means and continuous pilot flame nozzle means, said fuel system including a source of fuel, positive displacement pump means, fuel inlet means between said fuel source and said pump means, and distribution means between said pump means and said main nozzle means for directing pressurized fuel to said main nozzle means, the improvement comprising, means defining a control loop between said distribution means and said inlet means operative to bypass pressurized fuel back to said inlet means, throttle valve means disposed in said control loop operative to restrict fuel bypass flow in proportion to main nozzle means demand and to permit substantially unrestricted bypass flow at minimum main nozzle means demand, minimum flow valve means in said control loop downstream of said throttle valve means operative to maintain a minimum pressure in said control loop ahead of said minimum flow valve means, branch tube means connected to said continuous pilot flame nozzle means and to said control loop between said throttle valve means and said minimum flow valve means for directing fuel to said continuous pilot flame means, and pressure compensating means in said minimum flow valve means operative to increase the pressure in said control loop ahead of said minimum flow valve and in said branch line in proportion to a control parameter of said gas turbine engine.

4,394,812
SUPERCHARGED INTERNAL COMBUSTION ENGINE FOR MOTOR VEHICLES

Hans Mezger, Freiberg, Fed. Rep. of Germany, assignor to Dr. Ing. h.c.F. Porsche Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Mar. 23, 1981, Ser. No. 246,587
Claims priority, application Fed. Rep. of Germany, Mar. 22, 1980, 3011203
Int. Cl.³ F02B *37/12*
U.S. Cl. 60—600 **5 Claims**



1. A supercharged internal combustion engine for motor vehicles, comprising an exhaust turbocharger including an exhaust gas turbine and a charging blower driven thereby, said charging blower receiving fresh air through an intake line and delivering same under pressure to the engine through a charging air line; a charge pressure control valve arranged in an exhaust manifold of the internal combustion engine, said charge pressure control valve being responsive to the charging blower charge pressure, and regulating an exhaust gas bypass line that bypasses the exhaust gas turbine; a selectively actuated performance control member regulating the passage cross section of the charging air line downstream of the charging blower; and a charging blower-coupled bypass line connecting the charging blower intake line to the charging air line at a location in the charging air line upstream of the performance control member, a blow-off valve means in said bypass line, means actuated in response to the position of the performance control member for closing the said blow-off valve means in all positions of the performance control member for which the passage is open; an additional bypass line coupled to the charging blower and connecting the intake line of the charging blower to the charging air line at a location in the charging air line upstream of the performance control member, said additional bypass line containing a solenoid valve means controlled by at least one of the operating parameters of the internal combustion engine for regulating the passage cross section of the additional bypass line,

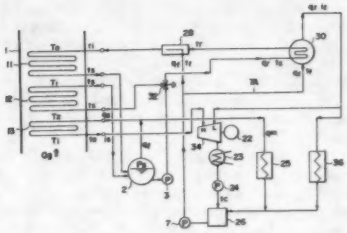
characterized in that the at least one operating parameter includes engine rpm and said solenoid is actuated by an rpm transducer.

4,394,813
EXHAUST GAS HEAT RECOVERY SYSTEM IN INTERNAL COMBUSTION ENGINE

Yoshiharu Tanaka, Machida; Yoshiaki Watanabe, and Kou Sasaki, both of Kawasaki, all of Japan, assignors to Mitsui Engineering and Shipbuilding Company Limited, Tokyo, Japan

Filed Sep. 22, 1981, Ser. No. 304,600
Claims priority, application Japan, Dec. 25, 1980, 55-184755
Int. Cl.³ F01K *23/10*
U.S. Cl. 60—618 **4 Claims**

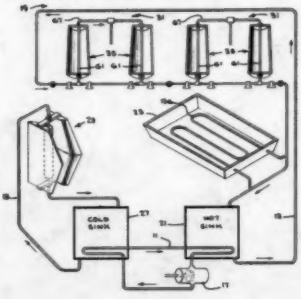
1. An exhaust gas heat recovery system in an internal combustion engine, comprising: an exhaust gas economizer having heat transfer sections including a preheating section, an evaporating section and a superheating section; a feed water heater for heating water fed to said heat transfer sections of the exhaust gas economizer; a steam separation drum for separating steam and saturated water from fluid of steam-water mixture discharged from the exhaust gas economizer; a mixed-pressure turbine having a high pressure side and a low pressure side, a piping for feeding part of the steam separated in said steam separation drum to said superheating section of the exhaust gas economizer and further transferring said steam to the high pressure side of said mixed-pressure turbine; a piping for feeding part of the saturated water separated in said steam separation drum to said feed water heater and said evaporating section of the exhaust gas economizer, respectively; a low pressure steam generator provided in said piping for returning the saturated water separated in said steam separation drum to said feed water heater; a piping for feeding low pressure steam in said low pressure steam generator to the low pressure side of said mixed-pressure turbine; and a piping for condensing exhausted steam from the mixed-pressure turbine in a condenser and thereafter circulating the water thus condensed to said feed water heater.



4,394,814
ENERGY GENERATION SYSTEM

John C. Wardman, 1060 San Tomas Aquino Rd., Campbell, Calif. 95008, and James Y. Adams, 26966 W. Fremont Rd., Los Altos Hills, Calif. 94022

Filed Apr. 1, 1981, Ser. No. 249,908
Int. Cl.³ F03G *7/02*
U.S. Cl. 60—641.15 **7 Claims**



1. A solar powered energy generation system comprising:
(a) a solar collector comprising
1. at least one mirror, the mirror further comprising a laminated panel including a paperboard base having a generally parabolic cross-sectional shape and a reflective sheet overlaying the concave face of the parabolic base;
2. a copper conduit for conducting the first fluid means,

the conduit positioned along a line approximating the locus of points defining the focus of the mirror;

3. means mounting the collector for rotating the mirror's reflective overlay toward the sun;

4. means mounting the collector for tilting the mirror and conduit relative to the angle of the sun's radiation to the earth;

(b) a heat storage device;

(c) a heat engine;

(d) motive fluid means driving the heat engine;

(e) first fluid means transferring heat from the solar collector to the motive fluid means, the first fluid means passing in heat exchange relationship with the heat storage device intermediate the solar collector and the motive fluid means; and

(f) second fluid means for absorbing and removing heat from the motive fluid means, and

(g) wind means for cooling the second fluid means.

4,394,815

PROCESS FOR GENERATING ELECTRIC POWER BY MEANS OF TURBOGENERATORS USING HIGH PRESSURE VAPOR

Otto F. Domdey, Buchenstrasse 58, D-67 Ludwigshafen, Fed. Rep. of Germany

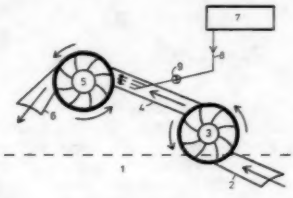
PCT No. PCT/EP80/00012, § 371 Date Nov. 6, 1980, § 102(e) Date Nov. 6, 1980, PCT Pub. No. WO80/01932, PCT Pub. Date Sep. 18, 1980

PCT Filed Mar. 3, 1980, Ser. No. 224,571

Claims priority, application Switzerland, Mar. 8, 1979, 2223/79

Int. Cl.³ F01K *25/06*

U.S. Cl. 60—649 **5 Claims**



1. An improvement in a process for generating electrical current by means of hydraulic turbogenerators, wherein a water stream is used to supply motive power to the turbines and wherein high pressure vapor is injected into the water stream, said improvement comprising the steps of:

injecting the high pressure vapor at a point outside of the turbine spaces;

injecting the high pressure vapor through conduits with relatively small interior cross-sectional areas; and

injecting the high pressure vapor into a water stream having a very high flow rate,

such that continuous pressure and velocity increases are caused in the water stream by the injected vapor and practically no heat exchange takes place between the injected vapor and the water prior to contact with the turbines.

4,394,816

HEAT PUMP SYSTEM

Roger J. Voorhis, Liverpool, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Nov. 2, 1981, Ser. No. 317,093

Int. Cl.³ F25B *41/06*

U.S. Cl. 62—205 **9 Claims**

1. A heat pump system comprising:

compressor means for compressing refrigerant vapor;

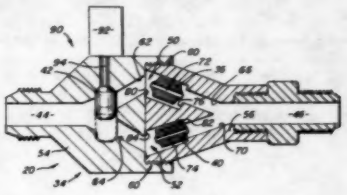
a first heat exchanger located within an enclosure for condensing refrigerant vapor from the compressor means;

a second heat exchanger located outside the enclosure in heat exchange relationship with a heat exchange medium located ouside the enclosure, for evaporating condensed refrigerant from the first heat exchanger;

an expansion device located between the first and second heat exchangers for expanding condensed refrigerant passing from the first heat exchanger to the second heat exchanger, and including

a body defining an inlet, an outlet, a first flow passage for conducting refrigerant from the inlet to the outlet, and a second flow passage spaced from the first flow passage and also for conducting refrigerant from the inlet to the outlet,

first restriction means located in the first flow passage and



defining first port means for metering refrigerant flow through the first flow passage at a first flow rate,

second restriction means located in the second flow passage and defining second port means for metering refrigerant flow through the second flow passage at a second flow rate less than the first flow rate, and

a valve supported within the body for movement between a first position, closing the second flow passage to direct refrigerant through the first flow passage, and a second position, closing the first flow passage to direct refrigerant through the second flow passage;

a sensor for sensing the temperature of the medium outside the enclosure which is in heat exchange relationship with the second heat exchanger; and

means responsive to the sensor for moving the valve from the first position to the second position when the sensed temperature falls below a preset level.

4,394,817

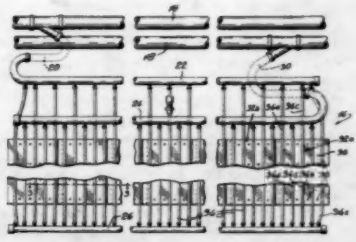
APPARATUS FOR MAKING AND MAINTAINING AN ICE SURFACE

Jean M. Remillard, 9390 Eastman, LaSalle, Quebec, Canada H8R 2K8

Filed Sep. 9, 1981, Ser. No. 300,573

Int. Cl.³ A63C *19/10*

U.S. Cl. 62—235 **5 Claims**



1. In an apparatus for making and maintaining an ice surface, a plurality of elongated strips adapted to be laid on a predeter-

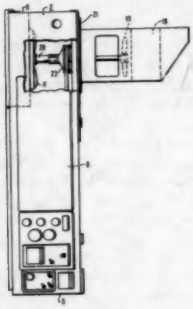
mined area, each strip comprising at least a strip module extending longitudinally of the strip, each strip module being a flexible extruded plastic member including a plurality of spaced-apart parallel tubular sections interspaced by integral uninterrupted web portions, the web portions being in a common plane, and the longitudinal edges of each module having web extensions forming wings adapted for attachment with similar wings of adjacent strip modules to form the strip; and wherein alternating tubular sections of each module forming a strip communicate with a supply header for supplying a flowable refrigerant thereto, and the remaining tubular sections in the strip communicate with a return header at the same end of the strip, and a common closed reverting header is connected to each tubular section of the strip at the other end of the strip.

4,394,818

TRANSPORT REFRIGERATION UNIT WITH REMOVABLE POWER PACK FRAME

Jerry A. Brownfield, Minneapolis; Richard J. Sandberg, Bloomington; Thomas J. Niemi, Minneapolis, and Leland L. Howland, Bell Plaine, all of Minn., assignors to Thermo King Corporation, Minneapolis, Minn.

Filed Sep. 16, 1981, Ser. No. 302,901
Int. Cl.³ B60H *3/04*
U.S. Cl. 62—239 **7 Claims**



1. In a transport refrigeration unit including an exterior section adapted to be mounted on the front face of a transport trailer or the like, an interior section including a refrigerant evaporator adapted to project rearwardly from the top, rear part of said exterior section into said trailer, and including a refrigerant compressor and at least an internal combustion engine for driving said compressor, a construction and structural arrangement of elements for said unit comprising:

said exterior section is of generally rectangular box shape and of significantly greater height than width, and includes a refrigerant condenser generally vertically disposed at the upper front face of said exterior section;

said exterior section includes means defining a front opening having a height from closely adjacent the bottom of said exterior section to closely adjacent the lower edge of said condenser, and a width for substantially the width of said exterior section;

power pack frame means disposed in the lower portion of said exterior section for mounting, in separated relation and independently, at least both said engine and said compressor at vertically displaced levels, said engine being located with its base at a substantially lower level than the level of the base of said compressor;

said engine and compressor being disposed with their output and input ends, respectively, projecting in directs toward each other and with the compressor input end overlying said engine output end, each of said ends including first pulley means connected by first belt means lying in a vertical plane transverse to the width of said exterior section for driving said compressor input means from said engine when it operates;

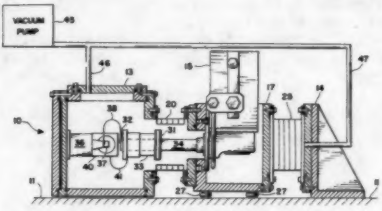
said power pack frame means includes an engine mount section including front and rear bottom horizontal rails to which said engine is secured, and front and rear vertical gusset members of generally rhomboid shape extending from closely adjacent one side of said exterior section for a major part of the length of said frame means and having said engine mounted in nested relation therebetween, said frame means including upper rail means extending from said gusset members to adjacent the other side of said section, said upper rail means supporting compressor mounting means.

4,394,819

VIBRATION ISOLATION AND PRESSURE COMPENSATION APPARATUS FOR SENSITIVE INSTRUMENTATION

Robert D. Averill, Newport News, Va., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Aug. 16, 1982, Ser. No. 408,575
Int. Cl.³ F25B *19/00*
U.S. Cl. 62—514 R **13 Claims**



1. The combination of sensitive instrumentation for detecting and measuring chemical constituents of the atmosphere and a cooler unit for cryogenically maintaining components of the sensitive instrumentation at cryogenic temperatures during operation thereof, the improvement therewith comprising:

vibration attenuating mechanism for minimizing vibrations transmitted from the cooler unit to the sensitive instrumentation components, said vibration attenuating mechanism including a housing assembly module secured to an instrument platform and housing a mount therein for retaining a sensitive instrumentation component in fixed position;

a reaction bracket module also secured to the instrument platform and spaced from said housing assembly module;

a cooler unit module secured to the instrument platform intermediate said housing assembly module and said reaction bracket; and

means for connecting said cooling unit module to said housing assembly module and said reaction bracket such that said cooling unit is substantially floating therebetween and vibrations inherent in said cooler unit operation are dampened and isolated from said sensitive instrumentation component.

4,394,820

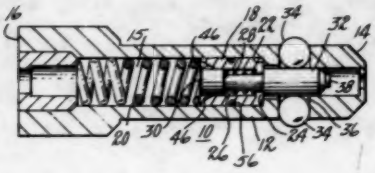
DOUBLE ACTION BARREL LOCK

James A. Swisher, 464 Mill Hill Dr., Southport, Conn. 06490

Filed Feb. 23, 1981, Ser. No. 236,747
Int. Cl.³ E05B *67/36*
U.S. Cl. 70—34 **10 Claims**

1. A lock of the type having a housing with an elongated aperture opening to the rear of the housing and a lock operating plunger axially movable in the housing, in which said

plunger is formed of a rear tool engaging portion spring biased forwardly and a forward locking portion spring biased rearwardly so that the plunger normally has a predetermined



overall length, and means engagable by an inserted picking tool to cause said forward locking portion to move forwardly in relation to the rear tool engaging portion to increase the overall length of the plunger.

4,394,821

DOOR LOCK MECHANISM

Walter E. Best, and William R. Foshee, both of Indianapolis, Ind., assignors to Best Lock Corporation, Indianapolis, Ind.

Filed Jun. 5, 1981, Ser. No. 270,825
Int. Cl.³ E05B 17/04, 63/00
U.S. Cl. 70—422 36 Claims

1. Door-lock mechanism having a torque-releasable knob, comprising

a knob sleeve mounted for rotation on its axis and connected to retract a door bolt, means for locking the sleeve against rotation to prevent it from retracting the bolt,

a knob mounted for rotation on the axis of the sleeve and having a coaxial part surrounding a part of the sleeve,

means for normally connecting the knob to rotate the sleeve to retract the bolt, and releasable under excessive relative turning force,

said means comprising a drive lug mounted on one of said parts and movable toward the other, drive faces on one and cam faces on the other of said lug and other part, means biasing the lug in a direction to engage said drive and cam faces for transmitting limited torque from the knob to the knob sleeve for rotating the latter to retract the bolt,

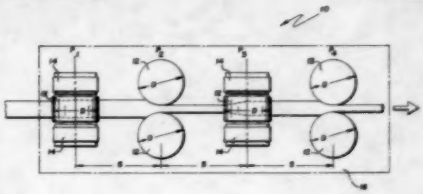
said drive and cam faces being so shaped and said biasing means having such force that excessive knob-turning force will cause the lug to be yieldingly cammed to a retracted position to release the normal drive connection from the knob to the sleeve.

4,394,822

HIGH REDUCTION METHOD AND APPARATUS FOR CONTINUOUSLY HOT ROLLING PRODUCTS

Keith F. Simons, Worcester, Mass., assignor to Morgan Construction Company, Worcester, Mass.

Continuation-in-part of Ser. No. 156,940, Jun. 6, 1980, abandoned. This application May 6, 1981, Ser. No. 257,029
Int. Cl.³ B21B 13/12
U.S. Cl. 72—235 15 Claims



1. A high reduction method of continuously hot rolling a product, comprising: passing the product through a series of at least three roll passes and effecting in said roll passes progressively larger reductions on the product, with at least two successive roll passes in said series having their roll axes arranged at right angles relative to each other, and with the distribution of horizontal forces in at least the third roll pass being such that spontaneous entry is prevented in said third roll pass by a maximum opposing force which is greater than the available delivery force generated by the rolling action of the second roll pass; and employing the available delivery force of the first roll pass to exert an additional momentary force on the product in advance of the second roll pass, the said additional momentary force being of sufficient magnitude when combined with the available delivery force of the second roll pass to overcome said maximum opposing force and thus achieve forced entry of the product in said third roll pass.

12. Apparatus for continuously hot rolling a product, comprising: a series of at least three roll passes which effect progressively larger reductions on the product, with at least two successive roll passes in said series having their roll axes arranged at right angles relative to each other, the third of said roll passes having an angle of bite such that spontaneous entry of the product therein is prevented by a maximum opposing force which is greater than the available delivery force generated by the rolling action of the second roll pass; the available delivery force of the first roll pass being sufficient to exert a momentary additional force on the product in advance of said third roll pass, the said momentary additional force being of sufficient magnitude when combined with the available delivery force of said second roll pass to overcome said maximum opposing force and thus achieve forced entry of the product in said third roll pass.

4,394,823

ELECTRICAL SIGNAL GENERATING FUEL INJECTION VALVE

Odon Kopse, Utzenstorf, Switzerland, and Nestor R. Amaya, Stuttgart, Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Oct. 13, 1981, Ser. No. 311,052
Claims priority, application Fed. Rep. of Germany, Oct. 30, 1980, 3040811
Int. Cl.³ G01M 15/00
U.S. Cl. 73—119 A 8 Claims

1. Electrical signal generating fuel injection valve having a housing (10, 13);

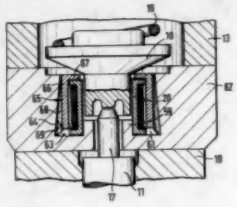
a reciprocable needle valve element (11, 17) positioned in the housing;

an induction coil (20) positioned to surround the needle valve element so that, upon movement of the valve ele-

ment, the reluctance of the electromagnetic circuit including the induction coil will change, thereby generating an electrical operating response signal,

said housing including an insert ring (62, 72) formed with a central opening (61, 71) and having a bottom wall (63, 73) therein, in which opening the coil (20) is retained,

and comprising, in accordance with the invention,



a holding sleeve (65) having a generally cylindrical, axially extending portion (66) and a radially inwardly extending flange (67) joined to said axially extending portion, fitted in the opening (61, 71) of the insert ring (62, 72),

the induction coil being positioned within the cylindrical portion (66) of the holding sleeve and pressed against the bottom wall (63, 73) of the opening (61, 71) by said flange (67)

4,394,824

ACOUSTIC MICROSCOPE

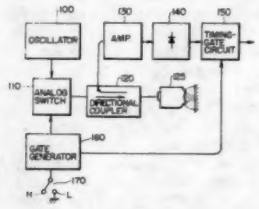
Hiroshi Kanda, Tokorozawa; Isao Ishikawa, Hino; Toshio Kondo, Kunitachi, and Kageyoshi Katakura, Nakamachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 6, 1981, Ser. No. 261,032

Claims priority, application Japan, May 6, 1980, 55-58707

Int. Cl.³ G01N *29/00*

U.S. Cl. 73—606 **7 Claims**



1. An acoustic microscope having a first ultrasonic propagating solid medium, ultrasonic wave generator means for generating an ultrasonic wave from one end of said solid medium, a concave spherical surface formed at the other end of said solid medium, a second ultrasonic propagating medium arranged between said conical spherical surface and a specimen, driver means for driving said ultrasonic wave generator means with an electrical signal to effect generation of the ultrasonic wave whereby in response to the generated ultrasonic wave an ultrasonic wave is reflected from said specimen and a ultrasonic wave is reflected from the boundary between said concave spherical surface and said second ultrasonic propagating medium, and detector means for detecting the ultrasonic wave reflected by said specimen, said driver means driving said ultrasonic wave generator means with an electrical signal having characteristics to cause the reflected ultrasonic wave from said specimen to interfere with the reflected ultrasonic wave from the boundary between said concave spherical surface and said second ultrasonic propagating medium.

4,394,825

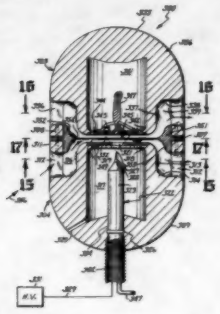
FLUID FLOW MEASUKING APPARATUS

Zell DuVall, St. Paul, Minn., assignor to TSI Incorporated, St. Paul, Minn.

Continuation-in-part of Ser. No. 155,312, Jun. 2, 1980, Pat. No. 4,331,037. This application Sep. 25, 1981, Ser. No. 305,525

Int. Cl.³ G01F *1/56*

U.S. Cl. 73—861.09 **71 Claims**



57. An apparatus for measuring the movement of a fluid comprising: housing means having a fluid flow path, side wall means having a plurality of rows of openings open to the outside of the housing means, and annular passage means between and in communication with said plurality of rows of openings and the fluid flow path, whereby fluid flows through said openings and annular passage into and out of said fluid flow path, and means for sensing the flow of fluid in said fluid flow path and providing information signals providing information as to the movement of the fluid flowing in said flow path.

4,394,826

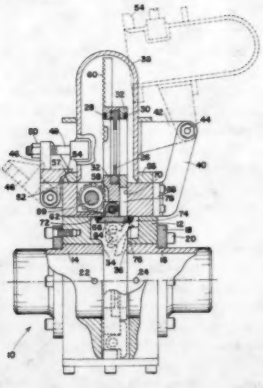
ORIFICE METER WITH ISOLATION VALVE ON THE CARRIER

Davis A. Van Scoy, Simonton, Tex., assignor to Grove Valve and Regulator Company, Oakland, Calif.

Filed Dec. 24, 1981, Ser. No. 334,144

Int. Cl.³ G01F *1/42*

U.S. Cl. 73—861.61 **4 Claims**



1. An orifice meter comprising:

a body having a lower main chamber with aligned flow passages therein and an upper service chamber;

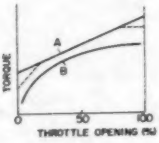
an orifice disc carrier plate movable in said body between said main chamber and said service chamber;
a downwardly directed, sealing surface around the lower end of said service chamber; and
an isolation valve plate pivotally suspended from the bottom of said carrier plate;
an edge of said valve plate being engagable with said sealing surface when said carrier plate is raised to pivot said valve plate into horizontal position to then be moved into sealing engagement with said sealing surface upon further lifting of said carrier plate.

4,394,827

TRANSMISSION CONTROL SYSTEM WITH MODIFIED FRICTION ENGAGING MECHANISM ACTUATING PRESSURE

Seitoku Kubo, Toyota; Koujiro Kuramochi, Okazaki, and Tatsuo Kyushima, Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Nov. 25, 1980, Ser. No. 210,214
Claims priority, application Japan, Mar. 27, 1980, 55-39537
Int. Cl.³ B60K 41/10
U.S. Cl. 74—868 **2 Claims**



1. For an automatic transmission for an automotive vehicle, comprising a gear transmission mechanism and a plurality of fluid pressure actuated friction engaging mechanisms, a plurality of speed stages being provided by said gear transmission mechanism according to selective actuation of said friction engaging mechanisms;

a fluid pressure control system, comprising:

(a) a line fluid pressure control valve which produces a line fluid pressure which increases from a predetermined base pressure approximately proportionally to a quantity representative of engine load;

(b) a throttle fluid pressure control valve which produces a throttle fluid pressure which is approximately proportional to said quantity representative of engine load;

(c) a means for controlling fluid pressure, which receives supply of said line pressure and said throttle pressure and outputs an output fluid pressure, and which comprises;

a first fluid pressure modulation valve, which is supplied with the throttle pressure, and which outputs a throttle modulator fluid pressure which is the same as throttle pressure when the throttle pressure is below a first predetermined level, and is equal to said first predetermined level when the throttle pressure is greater than said first predetermined level; and

a second fluid pressure modulation valve, which receives said line fluid pressure and said throttle modulator fluid pressure, and which produces, as said output of said fluid pressure control means, a fluid pressure which, when the line pressure is lower than a second predetermined pressure, is less than line pressure, but increases faster with increasing engine load than does said line pressure; when said line pressure is between said second predetermined pressure and a third predetermined pressure, is substantially equal to line pressure; and, when line pressure is greater than said third predetermined pressure, is substantially equal to said predetermined pressure;

(d) a shift valve which receives said output fluid pressure and which, according to the operational conditions of the vehicle, selectively supplies it as an actuating fluid pressure to one of said friction engaging mechanisms;

whereby the overall shape of a graph of said output fluid pressure of said fluid pressure control means as the ordinate, and engine load as the abscissa, is convex upwards;

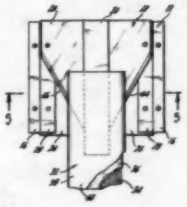
whereby said shift valve is provided with a pressure to supply to said friction engaging mechanism as an actuating fluid pressure, the variation of which with respect to engine load is of the same general nature, as is the variation of engine torque with respect to engine load.

4,394,828

SHIELDED/JACKETED RIBBON-CABLE SHEATHING STRIPPING TOOL

Dennis J. Garbis, P.O. Box 1555, Santa Ana, Calif. 92702, and Donald E. Baker, 11314 212th St., Lakewood, Calif. 90715

Filed Apr. 14, 1981, Ser. No. 254,154
Int. Cl.³ H02G 1/12
U.S. Cl. 81—9.51 **3 Claims**



1. A tool for use in stripping sheathing from a ribbon cable of the type characterized by a series of parallel conductors lying in a plane encased in one or more layers of sheathing having first and second opposite sides essentially parallel to the plane of the conductors connected along their longitudinal edges comprising a frame having at least two spaced-apart upright supports adapted to be mounted on a horizontal surface and when mounted, extending generally at right angles thereto, and a cutting assembly supported by said upright supports at a predetermined position above the horizontal surface, said cutter assembly including a cutting blade having a forward end, a central axis and at least two cutting edges in the plane of said blade extending rearwardly and at an angle to said central axis with the central axis being an axis of symmetry for said cutting blade, said blade being secured to said upright supports in a position generally parallel to the horizontal surface, and a non-cutting guide member mounted on a surface of said blade symmetrical with the central axis thereof and having a leading edge extending forwardly of the forward end of said blade, said guide member adapted to be inserted between the conductor sheath and conductors of said ribbon cable to separate the same prior to the cable contacting the cutting edges as the cable is pushed rearwardly to slit said sheath while permitting the enclosed conductors to pass therethrough undamaged.

4,394,829

FLYING SHEAR FOR METAL STRIP STOCK

Herbert M. Stoehr, New Berlin, Wis., assignor to Artos Engineering Company, New Berlin, Wis.

Filed Oct. 13, 1981, Ser. No. 310,620
Int. Cl.³ B26D 1/00
U.S. Cl. 83—314 **9 Claims**

1. Shearing apparatus for making a transverse cut through a strip while said strip is in lengthwise movement in a forward direction, said shearing apparatus being characterized by:

A. a lower blade carrier confined to forward and rearward motion and having thereon an upwardly projecting lower shearing blade and an upwardly facing clamping surface;

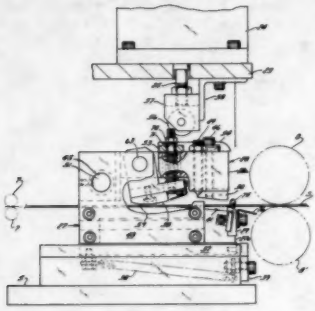
B. an upper blade carrier having thereon a downwardly projecting upper shearing blade cooperable with said lower shearing blade;

C. means connecting the upper blade carrier to the lower blade carrier for up and down motion relative thereto and for forward and rearward motion in unison therewith;

D. vertical biasing means urging the upper blade carrier to a raised position in which the shearing blades are vertically spaced apart;

E. thrust exerting means at a relatively stationary location above the blade carriers, engageable with said upper blade carrier to force it downwardly so that said blades can shear through a strip between them;

F. a gripper carried by the lower blade carrier for pivoting relative thereto about a gripper axis that extends trans-



versely to said forward direction and is spaced above the level of said clamping surface, said gripper having a bottom surface curved eccentrically to said gripper axis for wedging engagement with the top surface of a strip therebeneath to clamp the strip against said clamping surface as the gripper swings forwardly about said gripper axis, thereby constraining the lower blade carrier to move forward with the strip; and

G. link means providing a lost motion connection between said gripper and the upper blade carrier whereby movement of the latter to its raised position swings the gripper rearwardly to a normal position in which its said bottom surface is spaced substantially above said clamping surface but whereby the upper blade carrier is allowed to continue its descent after said bottom surface is engaged with a strip.

4,394,830

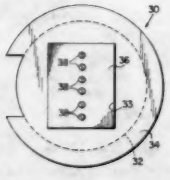
FEEDBACK REDUCER FOR AN ACOUSTIC ELECTRIC GUITAR

Paul J. Damiano, Manchester, Conn., assignor to RMI Corporation, Emerson, N.J.

Filed May 26, 1981, Ser. No. 266,903

Int. Cl.[3] G10D *1/08*; G10G *7/00*; G10H *3/18*

U.S. Cl. 84—1.15 **12 Claims**



1. A feedback reducing plug for insertion into a sound hole formed in the top plate of an acoustic electric guitar, or into the sound hole formed in the top plate of an acoustic guitar when converting such acoustic guitar to an acoustic electric one, and adapted to be easily manually inserted into and removed from such sound hole without the need for tools and to hold its place in such sound hole after insertion until manually removed, said plug comprising:

a head portion in the form of a rigid plate adapted to overlie the top surface of a top plate such as aforesaid and to completely cover the sound hole therein, and

a securement portion extending from said head portion, said securement portion being adapted to extend into said sound hole and having means for holding said plug in place relative to a top plate such as aforesaid by a press fit engagement with the edge surface of said sound hole which edge surface extends from the top surface to the bottom surface of said top plate and defines said sound hole.

4,394,831

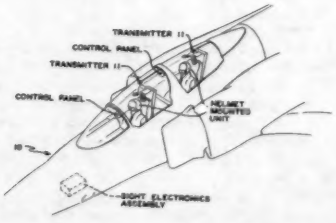
HELMET METAL MASS COMPENSATION FOR HELMET-MOUNTED SIGHTING SYSTEM

Werner H. Egli, Minneapolis; Jeffrey M. Setterholm, Minnetonka, and E. Jack Weir, Roseville, all of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Feb. 12, 1981, Ser. No. 233,747

Int. Cl.[3] F41G *9/00*; G01R *33/02*

U.S. Cl. 89—41 EA **11 Claims**



1. An electromagnetic system for utilizing electromagnetic field vectors in determining the orientation of a helmet, and for compensating for distortions of said electromagnetic field vectors caused by the metal mass of the helmet, the system comprising:

transmitting means for transmitting electromagnetic field vectors, said transmitting means including a transmitting antenna having at least two transmitting coils;

a receiving antenna having three non-coplanar receiving coils fixed to the helmet, said receiving coils sensing the electromagnetic field vectors transmitted by said transmitting antenna; and,

control means responsive to said electromagnetic field vectors received by said receiving antenna for iteratively determining helmet orientation compensated for distortions of said electromagnetic field vectors caused by helmet metal mass, said control means having an output for supplying said compensated orientation to a utilization means.

4,394,832

BRAKE BOOSTER FOR AUTOMOTIVE VEHICLES

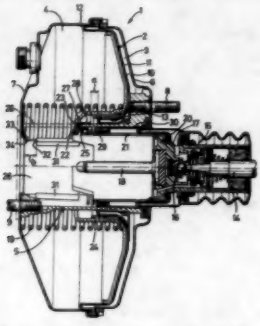
Rolf Weiler, and Peter Boehm, both of Frankfurt am Main, Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Feb. 5, 1981, Ser. No. 231,838

Claims priority, application Fed. Rep. of Germany, Mar. 20, 1980, 3010605

Int. Cl.³ F15B 9/10

U.S. Cl. 91—376 R 14 Claims



1. A brake booster for automotive vehicles comprising:

a low-pressure casing sealingly subdivided into a low-pressure chamber and a working chamber by an axially movable wall;

a reinforcement tube extending axially through said casing having its ends fastened to the end walls of said casing and sealed to said movable wall by a rolling diaphragm;

a mechanically actuated control valve to connect said working chamber with a selected one of said low-pressure chamber and atmosphere, said control valve having a housing axially movable within said tube and connected to said movable wall by ribs extending radially through longitudinal slots disposed in said tube, said rolling diaphragm rolling over at least a portion of said slots adjacent said working chamber; and

a sliding element engaging and axially guided by axially extending rims of each of said slots, said elements having means distinct from said wall to axially displace said elements together with said wall and each of said elements having a covering bead which overlaps said portion of said slots between said slots and said rolling diaphragm.

4,394,833

BRAKE BOOSTER

Rolf Weiler, Frankfurt am Main-Sindlingen, and Wilfried Wagner, Frankfurt am Main, both of Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York

Filed Mar. 2, 1981, Ser. No. 239,736

Claims priority, application Fed. Rep. of Germany, Apr. 19, 1980, 3015187

Int. Cl.³ F15B 9/10

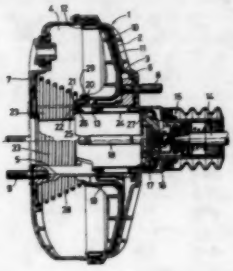
U.S. Cl. 91—376 R 10 Claims

1. A brake booster for automotive vehicles comprising:

a low-pressure casing having a longitudinal axis sealingly subdivided into a low-pressure chamber and a working chamber by an axially movable wall, said wall including a flexible diaphragm and a rigid diaphragm plate having a cylindrical hub disposed coaxially of said axis extending into said low-pressure chamber, said hub having an annular end surface in said low-pressure chamber:

a reinforcement tube disposed coaxially of said axis concentrically within said hub extending through said casing having its ends fastened to end walls of said casing, said tube having slots therein parallel to said axis, the outer surface of said tube being closely adjacent the inner surface of said hub;

a mechanically actuatable control valve to connect said working chamber to a selected one of said low-pressure chamber and atmosphere, said control valve being disposed in a control valve housing which is axially movable in said tube in a force-transmitting relationship with a master cylinder piston actuating rod; and



a metallic spacer ring having a radially outwardly projecting shoulder outside said tube disposed coaxially of said axis in an abutting relationship with said annular end surface, said spacer ring having radially extending ribs projecting through said slots in a force-transmitting relationship with said control housing to transmit boosting forces from said wall to said control housing, said spacer ring being secured to said annular end surface by a lock-in connection means extending axially into said low-pressure chamber from said annular end surface.

4,394,834

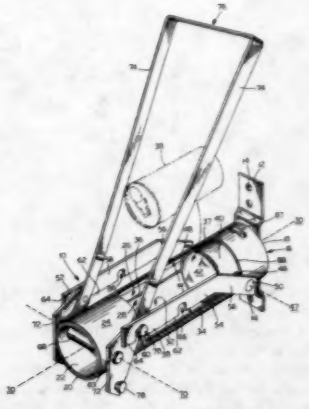
CAN CRUSHER

Richard D. Lowe, 3 West St., Windsor Locks, Conn. 06096

Filed Jul. 13, 1981, Ser. No. 282,670

Int. Cl.³ B30B 9/32

U.S. Cl. 100—245 13 Claims



1. A can crusher comprising:

a housing having a tubular configuration with a base end and a front end, all symmetrically disposed about a centerline axis;

mounting means for attaching the can crusher to a support means;

a front plug fixedly disposed within the housing symmetrically about the centerline axis at the front end, having a back surface for providing a crushing surface;

a ram, having a cylindrical configuration, disposed within the housing and slidably engageable therein having a front surface in a variable spaced-apart relationship to the front plug and together with the housing and the front plug define a can cavity therebetween;

guide means for guiding the ram along the centerline axis toward and away from the front plug;

a pair of ratchet arms disposed in a spaced-apart relationship to one another with the housing positioned therebetween;

means for attaching the ratchet arms to the ram;

a pair of pivot plates disposed in a spaced-apart relationship to one another proximate the front end of the housing;

means for rotatably attaching the pivot plates to the housing;

handle means attached to the pivot plates for rotating the pivot plates about a rotation axis;

means for engaging the ratchet arms for providing movement of the ram toward or away from the front plug as the handle is rotated in a counterclockwise or clockwise direction respectively;

said housing having a first opening therein for inserting a can into the can cavity; and

a second opening in said housing for removing a crushed can from the can cavity.

4,394,835

DRIVE FOR ROTARY-ROLLER OFFSET PRINTING MACHINES

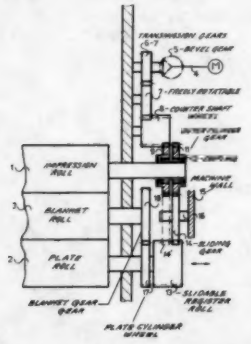
Peter Gertsch, and Robert Imhof, both of Bern, Switzerland

Continuation-in-part of Ser. No. 308,484, Oct. 5, 1981, abandoned, which is a continuation of Ser. No. 113,376, Jan. 18, 1980, abandoned. This application Dec. 23, 1981, Ser. No. 333,683

Claims priority, application Sweden, Jan. 22, 1979, 7900573

Int. Cl.³ B41F *5/18, 13/00*

U.S. Cl. 101—177 **14 Claims**



1. Drive means for a rotary-roller offset printing machine, with arbitrary reversibility of the rotation direction of impression roll means and of plate rolls of the machine, the drive means comprising:

impression roll means comprising an impression roll; a plurality of separate plate rolls for communicating with the impression roll means; a respective offset roll for each plate roll and being rotation-secured to the associated plate roll; each of the offset rolls being settable to be applied to the impression roll means for rotating together therewith;

two impression roll gears, each independently and rotatably connected with the impression roll means; coupling means for individually coupling one or the other of the two impression roll gears to the impression roll means for rotating therewith;

a drive for the two impression roll gears;

a countershaft wheel connected with the drive for being rotated thereby; the one impression roll gear engaging the countershaft wheel for being driven thereby; an intermediate wheel connected with the countershaft wheel for being driven thereby to rotate in the direction counter to the direction of rotation of the countershaft wheel; the other impression roll gear engaging the intermediate wheel for being driven thereby; whereby depending upon which of the two impression roll gears is connected with the impression roll means, the direction of rotation of the impression roll means is determined;

an axle drivingly connected with the plate roll; an indexing wheel at that axle and rotatable therewith;

a sliding gear rotatably mounted for engaging and for rotating the indexing wheel and also being axially slidable for selectively meshing with the one or the other impression roll gear, whereby the direction of rotation of the plate roll is determined by whichever one of the impression roll gears is engaged by the sliding gear.

4,394,836

RIFLE-GRENADE WITH BULLET PASS-THROUGH DEVICE

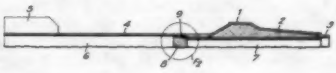
Rene M. Chavee, and Andre J. Gabriels, both of Genk, Belgium, assignors to Fabrique Nationale Herstal, en abrege F.N., Societe Anonyme, Herstal, Belgium

Filed Nov. 20, 1980, Ser. No. 208,691

Claims priority, application Belgium, Nov. 30, 1979, 58241

Int. Cl.³ F42B *11/42*

U.S. Cl. 102—485 **4 Claims**



1. Rifle-grenade, of the type comprising a head which is prolonged by a tubular shank, the aforesaid head being traversed by an axial bore running into the bore of the aforesaid tubular shank, characterized in that a bullet-pass-through device, of a single piece of material, is located in one of the aforesaid bores, this bullet-pass-through device being made from a material the hardness of which ranges from approximately 30 Shore A to approximately 70 Shore D.

4,394,837

PASSENGER STATION FOR ELEVATED RAILWAY SYSTEM

Lawrence K. Edwards, 3507 Slade Run Dr., Falls Church, Va. 22042

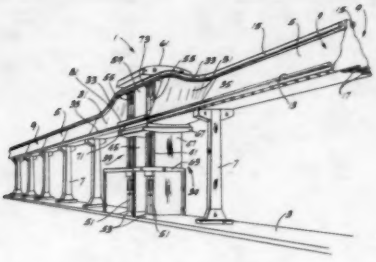
Filed Apr. 27, 1981, Ser. No. 257,954

Int. Cl.³ B61B *1/02, 13/04*

U.S. Cl. 104—28 **19 Claims**

1. In an elevated railway system comprising a beam structure, a track extending longitudinally of the beam structure along one side thereof, the track comprising a lower rail and an upper rail, and a car adapted to travel on the track having a door in its side toward the beam structure: a station comprising an elevator shaft structure extending up from ground level generally in the vertical plane of the beam structure in a gap in the beam structure, the gap in the beam structure being between first and second transition beam sections, the transition beam sections being effective to spread the upper and lower rail of the track, a track section extending alongside the transition beam sections on the same side thereof as the track on the beam structure and comprising a lower rail and an upper rail in continuity with the lower and upper rails of the beam structure, a track section extending alongside the elevator shaft

structure on the same side thereof as the track on the beam structure and comprising a lower rail and an upper rail in continuity with the lower and upper rails of the first and second transition beam sections, the lower and upper rails of said track section extending to the bottom and top of the door of a



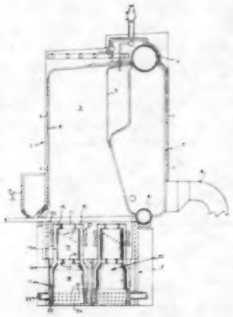
car stopped at the station for passenger egress from and ingress to the elevator shaft structure between the rails, and a passenger elevator movable up and down in the elevator shaft structure for carrying passengers from ground level up to car door level and back.

4,394,838

BURNING CELL FOR SOLID WASTE FUEL MATERIALS

David D. D'Agrosa, Boulevard de la Luz 209, Mexico City 20, Mexico

Filed Apr. 27, 1981, Ser. No. 257,978
Claims priority, application Mexico, Apr. 30, 1980, 182176
Int. Cl.³ F23B 7/00
U.S. Cl. 110—234 **11 Claims**



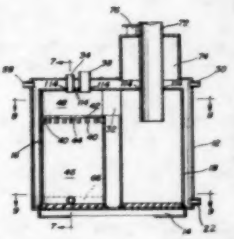
1. A burning cell for solid waste fuel materials which comprises in combination a vertical lower cylindrical burning chamber for waste fuel, a vertical upper cylindrical burning chamber for fines, a partition separating said chambers, a reduced diameter opening centrally arranged in said partition between said two chambers, a roof on said upper chamber, a reduced diameter outlet opening centrally arranged in said roof, a bottom in said lower chamber, feed means for solid waste fuel material arranged for feeding said waste fuel in the said lower chamber to build up a waste fuel pile on the bottom thereof, a plurality of circumferential arrays of inwardly radially directed tuyeres arranged in the side wall of said lower chamber near the bottom thereof, first air feed means to blow air into said lower chamber through said radially directed tuyeres and against said waste fuel pile, a helical array of downwardly inwardly and sidewardly inclined tuyeres arranged in the cylindrical wall of said upper chamber, second air feed means to blow air into said upper chamber through said tuyeres to produce an outer descending whirlpool of air which reverses direction at said partition to form a central ascending whirlpool of air between the centrally arranged reduced diameter opening of said partition and the centrally arranged reduced diameter opening of said roof, whereby the large particle fuel is totally burned in said pile in the lower chamber, and the partially burned fines are entrained by the air from the tuyeres of said lower chamber and are conveyed upwardly into the said central ascending whirlpool through said upper chamber, to more thoroughly burn said fines while preventing sufficient contact between said fines and the walls of said upper chamber to cause said fines to stick to the walls of said upper chamber.

4,394,839

COMBUSTION APPARATUS

Ikeda Toshio, 12-19, 6 chome, Chiyoda, Sagamihara, Kanagawa, Japan

Filed May 20, 1981, Ser. No. 265,596
Claims priority, application Japan, Oct. 16, 1980, 55-143629
Int. Cl.³ F23B 7/00
U.S. Cl. 110—234 **7 Claims**



1. A combustion apparatus comprising:

a hermetic casing including a furnace and a cyclone device operatively disposed therein with a space being provided therebetween;

said furnace being in communication with said cyclone device through a passage;

said hermetic casing having an inlet port for supplying fluid to said space and an outlet port for discharging fluid from said space;

said furnace including a firing port and a fire hole for supplying waste materials and an ashes hole for removing ashes all of which extend out of said hermetic casing;

an exhaust pipe being operatively positioned to extend through the top portion of said hermetic casing and a fire grate being disposed adjacent a bottom portion of said furnace;

a blower being operatively connected with said exhaust pipe and said fire grate to supply air to said furnace;

and said cyclone device including an ashes hole for removing ashes at the bottom portion thereof which extends out of said hermetic casing.

4,394,840

WORKPIECE GUIDE FOR AUTOMATIC SEWING MACHINE

Herbert Diekmann, Vlotho, and Helmut Niedrich, Gütersloh, both of Fed. Rep. of Germany, assignors to Durkoppwerke GmbH, Bielefeld, Fed. Rep. of Germany

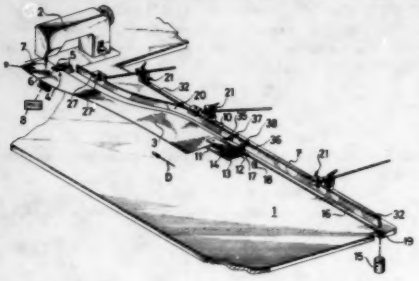
Filed Dec. 1, 1981, Ser. No. 326,193
Claims priority, application Fed. Rep. of Germany, Dec. 2, 1980, 8032048
Int. Cl.³ D05B 21/00
U.S. Cl. 112—121.15 **10 Claims**

1. In combination with a sewing machine having a work table and a fabric feed for displacing a workpiece to be sewn on said table in a predetermined forward longitudinal direction

through a sewing station on said table, a fabric guide comprising:

a transversely elastically deformable band extending generally in said direction and oriented on edge;

holder means engaging said band at a plurality of longitudinally offset locations for securing said band on said table with each of said locations in any of a multiplicity of



transversely offset positions, whereby said band can be deformed into and held in a nonstraight shape;

a carriage displaceable on said table along said guide and provided with a clip fastenable on said workpiece; and

means urging said carriage and clip longitudinally in a backward longitudinal direction opposite said forward longitudinal direction.

4,394,841

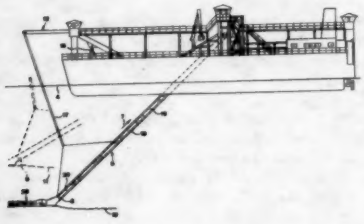
VESSEL FOR RECOVERING MATERIAL

Per B. Lundbäck, Västerleden 48 nb., 199 00 Enköping, Sweden

Filed Sep. 15, 1980, Ser. No. 187,327

Int. Cl.³ B63B *35/28*

U.S. Cl. 114—26 **19 Claims**



1. A vessel for recovering material such as oil from the water, comprising a first conveyor, which is pivotably mounted on the vessel about an axis extending generally horizontally and transversely relative to the longitudinal direction of the vessel, a portion of said first conveyor being adapted to be located below the water level so as to enable the first conveyor to transfer the oil out of the water, and a lifting device connected to the first conveyor to pivot the first conveyor about said axis, the improvement comprising said lifting device being designed to adjust the lower portion of the first conveyor into different levels below the water level to locate the lower portion of the first conveyor in the vicinity of the bottom of the sea to pick up material such as timber therefrom, wherein the first conveyor is rotatably mounted to the vessel about a second axis extending generally in the longitudinal direction of the vessel, and further wherein the first conveyor is rotatable about the second axis by means of at least one operating member, the actuation of which is automatically controlled by a device sensing side heelings of the vessel and which is adapted, upon side heelings of the vessel, to rotate the first conveyor about the second axis to entirely or partially eliminate the influence of said side heelings on the position of the first conveyor and the direction of the first axis.

4,394,842

ANCHOR

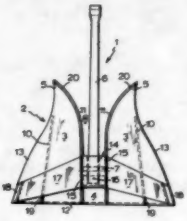
Rob van den Haak, Allegro 114, Krimpen an der Ijssel, Netherlands

Continuation of Ser. No. 973,239, Dec. 22, 1978, abandoned. This application Nov. 24, 1980, Ser. No. 209,368

Claims priority, application Brazil, Dec. 29, 1977, 7708742; Netherlands, Jun. 30, 1978, 7807093

Int. Cl.³ B63B *21/34*

U.S. Cl. 114—304 **3 Claims**



1. An anchor comprising:

a fluke comprised of fluke hands of a reinforced closed hollow structure formed by upper and lower plates interconnected by inner edge plate members and converging towards each other to form thin leading, trailing and side edges, each of said fluke hands formed with an outwardly turned front tip portion;

a forwardly pointed flange member mounted normal to said fluke and on said outwardly turned front tip portion to enhance the stabilizing action of said anchor;

a hinge pin disposed at a point substantially coincident with the geometric center of gravity of said anchor;

a shank mounted to said fluke by said hinge pin;

a central box formed about said hinge pin and defined by upstanding plates and head plates to delimit fluke angle;

rear stabilizer elements mounted at side corners of each of said fluke hands; and

wing plates extending from said head plates convergently towards said rear stabilizer elements and divergently towards said trailing edge.

4,394,843

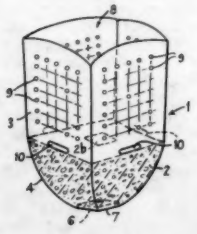
SELF-RIGHTING TRAFFIC MARKER

Gananath W. Ediriwira, 29, Cloister Rd., Acton W.3 London, England

Filed Jan. 5, 1981, Ser. No. 222,323

Int. Cl.³ E01F *9/01*

U.S. Cl. 116—63 P **4 Claims**



1. A portable self-righting traffic marker comprising:

a generally rigid body having a base on which the marker can rock and an integral rigid upper part,

an outwardly flaring multi-faced region merging said base with said integral upper part,

said integral rigid upper part of said body comprising a plurality of contiguous generally flat outwardly flaring side wall portions which define a nesting facility, formed as a hollow upper region having an open top, whereby a plurality of said traffic markers can be nested, one within the other,

weight means for selectively weighting said base so that said marker returns to its upright position by itself when it is knocked over,

land means on the bottom of said base for facilitating standing the marker on the ground in its upright position, and

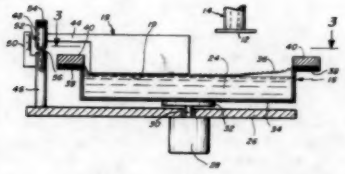
drain means for draining rain water entering said body through said open top.

4,394,844

CHIP COATER

Laurior A. Wood, 34 Bloody Brook, Amherst, 03031, and Donald N. Humphries, 45 Beave La., Bedford, N.H. 03102

Division of Ser. No. 259,854, May 4, 1981, Pat. No. 4,346,124.
This application Jan. 7, 1982, Ser. No. 337,953
Int. Cl.³ B05C *1/06, 3/18*
U.S. Cl. 118—260 **6 Claims**



1. Apparatus for applying an adhesive or the like to a circuit chip comprising:

a bath tray for carrying a quantity of a liquid adhesive or the like,

a mesh screen,

means securing said mesh screen to said bath tray with the screen extending at approximately the level of the liquid in the bath tray,

a leveling paddle,

and means supporting the paddle so as to sweep relative to the screen, essentially pressing the screen into the adhesive as the weeping action occurs.

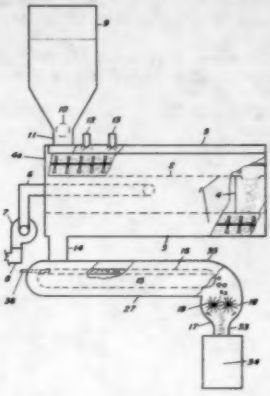
4,394,845

SEED COATING APPARATUS

Frederic E. Porter, St. Louis, and James M. Scott, Minneapolis, both of Minn., assignors to Sandoz Ltd., Basel, Switzerland

Division of Ser. No. 191,528, Sep. 29, 1980, abandoned, which is a division of Ser. No. 73,882, Sep. 10, 1979, Pat. No. 4,238,523.
This application Feb. 5, 1982, Ser. No. 346,282
The portion of the term of this patent subsequent to Dec. 9, 1997, has been disclaimed.
Int. Cl.³ A01C *1/06*
U.S. Cl. 118—303 **5 Claims**

1. A seed coating apparatus comprising, in combination, a mill assembly having an upstream end and discharge end and adapted to mix and advance plant seeds, metering means at the upstream end of said assembly and adapted to introduce continuously a measured amount of seeds into said assembly, spray means downstream from said metering means and adapted to apply a curable liquid seed coating composition onto a seed mass advancing in said assembly, conveyor means having an upstream receiving end and a downstream discharge end and adapted to accumulate seeds for advancement thereon as an agglomerated mass, the upstream end of said conveyor means being located in seed receiving relationship to the discharge end of said mill assembly, and a disagglomerator assembly



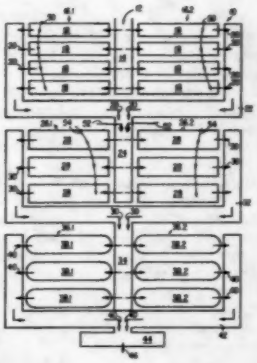
located at the discharge end of said conveyor means in position to receive and adapted to singulate seeds in agglomerated seeds discharged from said conveyor means.

4,394,846

CULTURE OF MARINE SPECIES

Oswald A. Roels, 28 Hewit Dr., Corpus Christi, Tex. 78404

Filed Sep. 9, 1981, Ser. No. 300,565
Int. Cl.³ A01K *61/00*
U.S. Cl. 119—2 **19 Claims**



1. A method of utilizing nutrient deficient ocean waters for the culture of marine species, which comprises:

(a) maintaining a flow of nutrient deficient ocean waters into and through a finfish culture stage at a sufficient rate to limit the development of planktonic species in that stage, and supplying finfish feed to the stage for the culture of finfish therein;

(b) maintaining a flow of finfish culture stage effluent through a shrimp culture stage, and supplying plankton nutrients to that stage for the culture of plankton to constitute shrimp feed for the culture of shrimp in that stage; and

(c) maintaining a flow of shrimp culture stage effluent through a filter feeder stage for the culture of filter feeders therein.

4,394,847

UNIT FOR THE ADMINISTRATION OF LIQUIDS TO ANIMALS, MORE SPECIALLY A WATERING BOWL

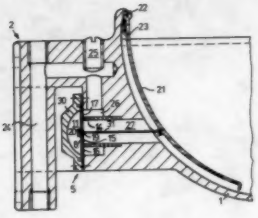
Georg Langenegger, Bachstr. 10; Franz Bauer, Unterer Graben 2, both of D-8050 Freising, and Josef Langenegger, Deutschherrenstr. 10, D-8891 Petersdorf, all of Fed. Rep. of Germany

Filed Aug. 7, 1981, Ser. No. 290,961

Claims priority, application Fed. Rep. of Germany, Aug. 14, 1980, 3030758

Int. Cl.³ A01K 7/02, 7/04, 7/06; F16K 7/17

U.S. Cl. 119—75 13 Claims



1. An animal waterer comprising:

a bowl formed with an animal actuatable movable member;

a main valve connected to said bowl and having:

a housing,

a water inlet communicating with said housing,

a water outlet communicating with the interior of said bowl,

an annular wall separating said inlet from said outlet and having an annular edge,

a valve diaphragm in said housing spanned across said edge and defining in said housing a pilot space pressurizable to press said diaphragm against said edge and block communication between said inlet and said outlet, and

a first passage formed in said diaphragm communicating between said inlet and said space for enabling water from said inlet to pressurize said space and press said diaphragm against said edge;

means defining a throttle passage communicating between said space and through said outlet; and

a pilot valve operatively connected to said member and displaceable thereby for said throttle passage whereby actuation of said member by an animal enables throttled flow of water from said space through said throttle passage and said outlet into said bowl and relieves the pressure in said space whereby said diaphragm is displaced by the pressure of water at said inlet from said edge to permit water to flow past said edge from said inlet to said outlet, said throttle passage being a hole formed in said diaphragm, said pilot valve including a valve body disposed at said hole and biased to close said hole in the absence of displacement of said member.

4,394,848

CENTRAL HEATING BOILER

Dirk B. L. Siebelt, Nuenen, Netherlands, assignor to AWB Apparatenfabriek Warmtebouw B.V., Beek en Donk, Netherlands

Filed Jul. 22, 1981, Ser. No. 285,837

Claims priority, application Netherlands, Aug. 4, 1980, 8004437; Aug. 4, 1980, 8004613

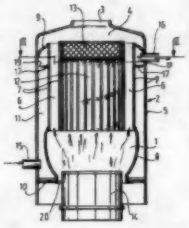
Int. Cl.³ F22B 7/00

U.S. Cl. 122—13 R 4 Claims

1. A boiler construction comprising, in combination:

a pair of upright, coaxial wall constructions comprising an outer wall of sheet metal having essentially a cylindrical shape and an inner wall formed for a substantial extent of its length by a group of longitudinally extending stave elements joined by weldments to provide a liquid tight cylindrical upper portion of the inner wall having a predetermined spacing from said outer wall, said inner wall also including a lower portion in the form of a bell shaped skirt of sheet metal defining a combustion chamber welded to said upper portion at the lower end thereof and spaced inwardly from the lower portion of said outer wall, said stave elements defining longitudinally extending flue gas passages at the inner side of said upper portion of the inner wall, which flue gas passages are in communication with the core region of said inner wall portion, and there being a closure means for said core region at that end thereof opposite said combustion chamber; and

wall means joining said inner wall construction to said outer wall construction for forming a water jacket between such inner and outer wall constructions and for relieving the boiler construction of destructive mechanical stresses due to unequal thermal stresses which occur in normal operation of the boiler, said wall means comprising first and second annular wall portions of different radial widths respectively extending radially between the upper end of said upper portion of the inner wall and the outer wall and between the lower end of said combustion chamber and the outer wall whereby the spacing between the inner and outer wall constructions and the spacing between said annular wall portions defines a relatively small volume such that water therein is heated rapidly to temperature, inlet and outlet means for flowing water into said small volume, said skirt which defines the combustion chamber having its upper end of a diameter substantially the same as the diameter of said upper portion of the inner wall and having its lower end of a different diameter so that the radial width of one of the annular wall portions is sufficiently greater than the radial width of the other annular wall portion as to relieve said boiler construction of said destructive thermal and mechanical stresses.



4,394,849

VAPOR GENERATOR HAVING DRAINABLE TUBE BENDS AROUND BURNER OPENINGS EXTENDING THROUGH FURNACE BOUNDARY WALLS FORMED IN PART BY ANGULARLY EXTENDING FLUID FLOW TUBES

Harry H. Pratt, deceased, late of West Orange, N.J., by Mary D. Pratt, executrix, and William J. Gill, New York, N.Y., assignors to Foster Wheeler Energy Corporation, Livingston, N.J.

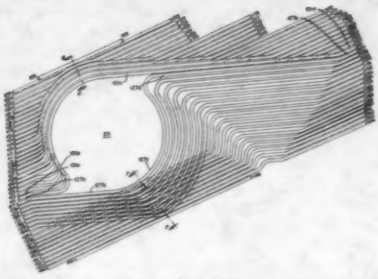
Filed Jun. 22, 1981, Ser. No. 276,122

Int. Cl.³ F22B 15/00, 25/00, 37/10

U.S. Cl. 122—235 K 7 Claims

1. A vapor generator comprising a plurality of tubes connected together and arranged to form at least a portion of the boundary walls of a gas-tight enclosure; at least one opening extending through at least one of said boundary walls; a series of adjacent tubes extending around at least a portion of said opening with one of said tubes of said series extending in the plane of said one boundary wall and the other tubes of said

series respectively extending in additional planes spaced from each other and from said first plane; at least one additional series of adjacent tubes extending around said first series, with one of said tubes of said additional series extending in the plane of said one boundary wall and the other tubes of said additional



series extending in said additional planes, respectively; said tubes extending at an acute angle with respect to a horizontal plane for the entire lengths of said tubes; burner means registering with said opening to apply heat to said enclosure; and means for passing fluid through said tubes to apply said heat to said fluid.

4,394,850

CYLINDER BLOCK FOR AUTOMOTIVE INTERNAL COMBUSTION ENGINE

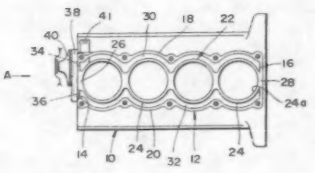
Yoshimasa Hayashi, Kamakura, Japan, assignor to Nissan Motor Company, Limited, Yokohama City, Japan

Filed Sep. 14, 1981, Ser. No. 302,238

Claims priority, application Japan, Sep. 16, 1980, 55-128400; Sep. 17, 1980, 55-131882[U]

Int. Cl.³ F01P *3/02*

U.S. Cl. 123—41.74 **7 Claims**



1. A cylinder block for an automotive in-line multiple-cylinder internal combustion engine, comprising:

outer wall means including oppositely located first and second end wall sections, and oppositely located first and second side wall sections, the top surface of said wall sections being continuous and lying on a common plane;

an elongate cylinder row structure spacedly located within said outer wall means, said cylinder row structure including a plurality of cylinder sections whose neighbouring cylinder sections are integrally connected with each other, said cylinder sections containing first and second extreme cylinder sections located at the opposite extremities of said cylinder row structure and positioned in the vicinity of said first and second end wall sections of said outer wall means, each cylinder section being formed with a cylinder bore therein, the top surface of said cylinder row structure lying on said common plane; and

first and second connecting wall means located between said outer wall means and said cylinder row structure, said first connecting wall means integrally connecting said first extreme cylinder section with said first end wall section, said second connecting wall means integrally connecting said second extreme cylinder section with said second end wall section of said outer wall means, thereby forming first and second coolant passages which are separate and independent from each other, each coolant passage being defined between said side wall section and said cylinder row structure, the top surface of each connecting wall means lying on said common plane.

4,394,851

DECOMPRESSION DEVICE IN AN INTERNAL COMBUSTION ENGINE

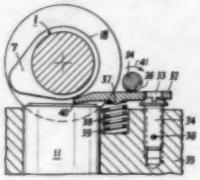
Josef Greier, and Colin T. Pomfret, both of Graz, Austria, assignors to Hans List, Graz, Austria

Filed Apr. 13, 1981, Ser. No. 253,279

Claims priority, application Austria, Apr. 15, 1980, 2038/80

Int. Cl.³ F01L *13/08*

U.S. Cl. 123—182 **5 Claims**



1. A decompression device for an internal combustion engine having at least one cylinder, at least one valve, and a camshaft including at least one cam having a base circle cam surface, said decompression device comprising:

a controllable operating spindle mounted on said engine and extending along the length of and parallel to said camshaft;

at least one decompression cam disposed on said operating spindle and provided for each said at least one cylinder;

a follower element for transmitting an operative lift of said camshaft cam to said valve;

a ratchet wheel connected to said spindle;

a trip element coacting with said ratchet wheel for restoring said decompression cam to an original position;

a decompression lever having one end for contacting said follower element and being articulately disposed between said decompression cam and said follower element;

a vertically adjustable bearing contacting the other end of said decompression lever; and

spring means for articulately mounting said decompression lever on said adjustable bearing and for applying said decompression lever to said decompression cam under spring loading, said at least one decompression cam being controllable to cause said decompression lever to selectively maintain said follower element in a decompression position with said follower element being spaced apart from said base circle cam surface.

4,394,852

COWL MOUNTED PULSE CONTROL START VALVE

Charles H. Tuckey, Cass City, and Alan D. Romig, Gagetown, both of Mich., assignors to Walbro Corporation, Cass City, Mich.

Filed May 18, 1981, Ser. No. 264,787

Int. Cl.³ F02M *1/16*

U.S. Cl. 123—187.5 R **5 Claims**

1. A system for priming a carburetor for an internal combustion engine which comprises:

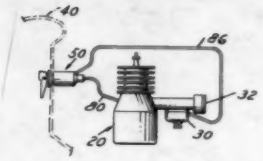
(a) a conduit connected to the body of an engine to receive and conduct pulses from said engine, said conduit being directly connected to a carburetor having a fuel and air mixing passage operatively associated with said engine

wherein pulses in said conduit will propel fuel into the mixing passage of said carburetor,

(b) a valve in said conduit located remote from said engine having a manually movable part to close said conduit in one position and to open said conduit in a second position,

(c) said valve comprising a valve body having a bore ensmalled at one end to provide a valve seat, and said movable part comprising a plunger slidable in and guided by said bore, and a valve element on one end of said plunger to cooperate with said valve seat,

(d) said valve plunger having an actuating stem on the other end extending from said body, and an actuating lever



pivoted on a first axis on said stem, a spring urging said plunger toward a valve closed position, and a plurality of surfaces on said lever spaced at respective angles around said first axis to bear selectively against said body in selected positions of said lever to control the position of said valve element relative to said valve seat, and

(e) said plurality of surfaces comprising two flat surfaces lying in planes parallel to the said first axis and contiguous to a corner surface, said corner surface forming a third surface, each surface to position said valve element, respectively, in a closed position relative to said valve seat, a maximum open position, and an intermediate position.

4,394,853

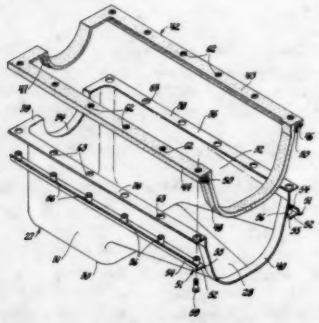
ENGINE OIL PAN ISOLATION MOUNTING

Jose M. Lopez-Crevillen, Westland, and John W. Huber, Plymouth, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Jun. 22, 1981, Ser. No. 275,739

Int. Cl.³ F02F 7/00

U.S. Cl. 123—195 C **3 Claims**



1. In combination in a combustion engine,

a crankcase having a pair of laterally spaced longitudinally extending generally parallel side rails connected laterally at their ends by end elements, said side rails and end elements having downwardly facing sealing surfaces comprising an oil pan receiving surface and fastener receiving openings through said side rail sealing surfaces,

an oil pan defining an open topped downwardly closed container with a peripheral flange extending laterally outward from open upper edges of the container, said flange having a top surface sealingly engageable with the oil pan receiving surface and spaced parallel side portions supportingly attached to said crankcase side rails, said side portions having openings aligned with said side rail openings,

a resilient vibration absorbing seal attached to said flange, said seal having an upper sealing portion extending along and clamped between said flange top surface and said oil pan receiving surface and peripheral retaining and isolating lips depending from said upper sealing portion and extending beneath said flange to secure the seal on the flange prior to assembly to the crankcase, said seal having openings through said sealing portion and said lips and aligned with said crankcase side rail openings and said oil pan side portion openings, and

securing means, including fasteners engaging said side rails and abutting support members engaging said seal isolating lips and urging said lips against the oil pan flange, to compress a predetermined limited amount the seal upper sealing portion between the flange and the oil pan receiving surface and the seal lips between the flange and the support members to thereby maintain sound isolating sealing enegagement between the oil pan and the crankcase and sound isolating engagement between the oil pan and the securing means,

said support members including sleeves extending through said seal and oil pan openings and engaging said crankcase side rails to limit compression of said seal, said fasteners extending through said sleeves to said side rails, said oil pan openings being large enough to avoid engagement with said sleeves and said seal openings being small enough to grip the sleeves upon assembly of the support members with the seal and oil pan to retain these members together for assembly to the crankcase.

4,394,854

METHOD AND APPARATUS FOR SEPARABLY CONNECTING CRANKSHAFTS IN INTERNAL COMBUSTION ENGINES

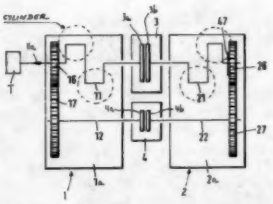
Lothar Huber, Bühl-Altschweier, Fed. Rep. of Germany, assignor to Luk Lamellen und Kupplungsbau GmbH, Bühl, Fed. Rep. of Germany

Filed Feb. 12, 1981, Ser. No. 233,890

Claims priority, application Fed. Rep. of Germany, Feb. 13, 1980, 3005343

Int. Cl.³ F02D 17/02

U.S. Cl. 123—198 F **53 Claims**



1. A method of establishing a separable connection between a rotating first crankshaft and a second crankshaft in an internal combustion engine wherein the first and second crankshafts respectively form part of discrete first and second units and the first and second units respectively further comprise first and second cylinder means for rotating the respective crankshafts and first and second camshafts rotating with the respective crankshafts, comprising the steps of accelerating the second crankshaft through the medium of the first camshaft; and thereupon connecting the second crankshaft with the rotating first crankshaft.

4,394,855
INTERNAL COMBUSTION ENGINE WITH EXTERNALLY SUPPLIED IGNITION HAVING AN IGNITION CHAMBER ASSOCIATED WITH THE MAIN COMBUSTION CHAMBER

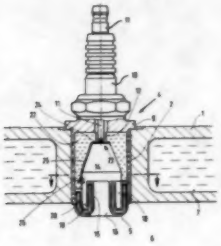
Reinhard Latsch, Vaihingen; Ernst Linder, Mühlacker; Helmut Maurer, Horrheim; Klaus Müller, Tamm, and Franz Rieger, Aalen-Wasseralfingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 7, 1981, Ser. No. 261,413

Claims priority, application Fed. Rep. of Germany, May 10, 1980, 3017948

Int. Cl.³ F02B *19/12*

U.S. Cl. 123—254 **14 Claims**



1. An internal combustion engine having a main combustion chamber with externally supplied ignition having an ignition chamber associated with said main combustion chamber, said ignition chamber arranged to communicate directly with said main combustion chamber via a discharge means and separated therefrom by a first wall in which said discharge means is formed and which partitions off said ignition chamber from said main combustion chamber, said discharge means including a first overflow conduit which is formed by a nozzle that protrudes into said ignition chamber and through which a fuel mixture is directed from said main combustion chamber to said ignition chamber, said discharge means further including at least one additional overflow conduit arranged to discharge a fuel mixture tangentially into an annular chamber formed between an outer circumference of said nozzle and a portion of said ignition chamber wall surrounding said nozzle, said ignition chamber having an ignition device including an electrode terminating radially across the annular chamber from the end of said nozzle which forms a radial spark gap with said nozzle directed toward said wall of said ignition chamber, a heat pipe disposed in a wall of said nozzle and at least in a portion of the ignition chamber wall adjoining cooled portions of the engine and surrounding said nozzle.

4,394,856
COMPRESSION OPERATED INJECTOR WITH FUEL INJECTION CONTROL

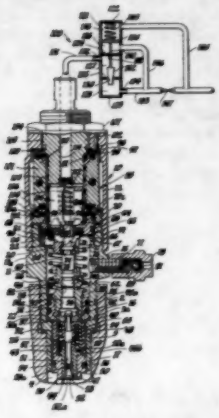
Richard H. Smith, Birmingham, and Donald J. Armstrong, Troy, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Jun. 29, 1981, Ser. No. 278,657

Int. Cl.³ F02M *49/02*

U.S. Cl. 123—506 **2 Claims**

1. In a compression operated diesel fuel injector for use with an internal combustion engine, the fuel injector being of the type having a housing means with a compression operated cylinder means and piston means operatively associated therewith; the cylinder means and piston means defining an injection pump chamber and also defining with the housing means a fuel control chamber; the housing means having a supply passage to the fuel control chamber for supplying fuel thereto and, a fuel return passage from the control chamber for the return of fuel to a source of low pressure fuel; and, a solenoid valve means operatively positioned to normally block flow of fuel from the control chamber to the fuel return passage, the improvement wherein a variable flow orifice means is operatively associated with the fuel return passage next adjacent to the solenoid valve means that is operative to control the pressure of fuel in said fuel return passage upstream of said variable



flow orifice means as a function of engine speed and load when the solenoid valve means is energized so as to regulate the flow of fuel from the fuel control chamber whereby to control engine compression operation of the cylinder means and thereby to correspondingly regulate the rate of fuel injection from the fuel injector as a function of engine speed and load.

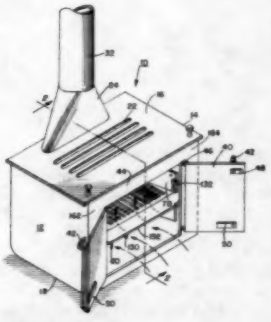
4,394,857
INSERT FOR A STOVE

Samuel J. Iannone, 15 W. Willow St., Beacon, N.Y. 12508

Filed May 28, 1981, Ser. No. 268,005

Int. Cl.³ F24C *1/00*

U.S. Cl. 126—60 **10 Claims**



1. A stove comprising:

an outer rear wall, an outer front wall and outer side walls connected to said outer rear and front walls;

a plurality of inner walls located within said outer walls and including an inner rear wall and inner side walls connected to said inner rear wall, said inner walls being spaced from said outer rear walls, said spacing between said outer and inner walls defining a first gap;

a base including a base rear wall and base side walls connected to said base rear wall, said base rear wall being spaced from said inner rear wall and said base side walls

being spaced from said inner side walls to define a second gap;

a grate and grate support means on said base walls for removably mounting said grate on said base walls, said grate including bars having bumps projecting upwardly therefrom;

grate moving means for moving said grate;

first air flow directing plate means on said base for deflecting air into an area located beneath said grate;

means for removably mounting a second air flow directing means on said base for directing air flow to a coal fire on said grate; and

granular heat transfer means located in said second gap for modulating heat transferred from said insert member to said stove outer walls, said heat transfer means including a mixture of a first material having a high thermal conductivity and a second material having a low thermal conductivity.

4,394,858

PHOTOCHEMICAL CONVERSION AND STORAGE OF LIGHT ENERGY BY ENDOERGIC ISOMERIZATIONS

Paul J. Giordano, Hudson, and Richard C. Smierciak, Warrensville, both of Ohio, assignors to Standard Oil Company, Cleveland, Ohio

Filed Dec. 31, 1980, Ser. No. 221,589
Int. Cl.³ F24H *7/00*; F24J *3/02*
U.S. Cl. 126—400 **10 Claims**

1. A process for the capture and storage of radiant energy comprising exposing an oxidatively stable photocatalyst to said radiant energy in the presence of a reversibly isomerizable carbon containing compound, wherein said photocatalyst comprises a carbonyl compound of a metal selected from Re, Ir, Rh, Ru, Os, Pt and Pd and wherein said isomerizable compound is capable of forming an intramolecular strained carbon containing ring structure.

4,394,859

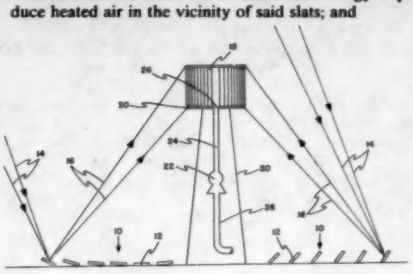
CENTRAL SOLAR ENERGY RECEIVER

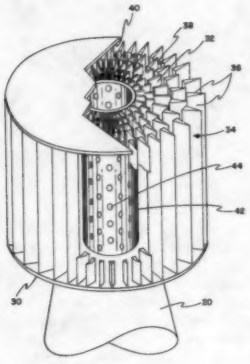
M. Kevin Drost, Richland, Wash., granted to U.S. Department of Energy under the provision of 42 U.S.C. 2182

Filed Oct. 27, 1981, Ser. No. 315,397
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—438 **6 Claims**

1. An improved point focus central solar energy receiver, mounted on top of a tower surronded by a heliostat field, for heating air, in the vicinage of said receiver, which is then drawn by a low pressure, induced draft fan through ductwork having an air inlet orifice on top of said tower, wherein the improvement comprises:

(a) a first plurality of solar energy absorbing, spaced-apart, and generally vertically oriented, elongated fin-shaped slats disposed in a first pluralism of concentric cylindrical arrays having a common axis and surrounding said air inlet orifice, with each of said slats generally radially oriented with respect to said axis and with said slats of adjacent said arrays not radially aligned with respect to each other, and wherein said slats absorb said solar energy from said heliostat field and reradiate heat energy to produce heated air in the vicinity of said slats; and





(b) means for distributing airflow of said heated air, which is pulled by said fan, from said vicinity of said slats to said air inlet orifice.

4,394,860

SOLAR LIGHT BULB

Derrick A. Smith, P.O. Box 1974, Hollywood, Fla. 33020

Filed Sep. 26, 1980, Ser. No. 191,122
Int. Cl.³ F23J *3/02*
U.S. Cl. 126—439 **14 Claims**

1. A system for generating light directly using solar energy comprising:

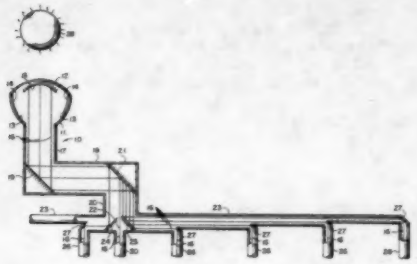
(a) a single master concentrator and accumulator for the sun's rays to generate a concentrated beam of visible solar radiation;

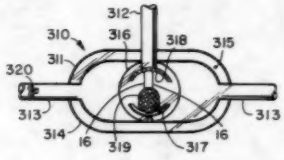
(b) a single master distributor shaft for distributing said beam of visible solar radiation as a collimated light;

(c) a fork in said single master distributor shaft providing a pair of branch shafts extending in opposite directions, the fork being provided with a pair of mirrors to direct said collimated light beam along each branch shaft, each branch shaft being provided with a plurality of light-ray conducting tubes extending at right angles to said branch shaft, each branch shaft being provided with a mirror at the intersection of said branch shaft with said light-ray conducting tube to direct said beam down each said light-ray conducting tube by reflecting parallel fractions of said beam, the cross-sectional area of said branch shaft decreasing as the distance from the fork increases;

(d) a solar bulb operatively associated with each light-ray conducting tube, said solar bulb including a double walled upper bulbous portion providing an inlet from said light-ray conducting tube and a pair of heat outlet tubes, and a

double walled lower bulbous portion, the upper portion thereof being divergently reflective, with the lower portion having walls which are either transparent or translucent to provide greater light diffusion, and the space





between the two walls being maintained under vacuum to provide heat insulation values;

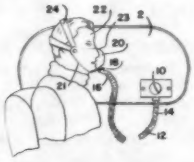
and (e) means within said solar bulb for the absorption and radiation of said concentrated beam of visible solar radiation.

4,394,861

OUTSIDE AIR BREATHING SUPPLY SYSTEM

Lawrence A. Sciortino, 313 Yacht Club Dr., Fort Walton Beach, Fla. 32548

Filed May 11, 1981, Ser. No. 262,232
Int. Cl.³ A62B 7/00
U.S. Cl. 128—205.25 **13 Claims**



1. Small aircraft low altitude emergency outside ram air breathing supply apparatus comprising:

ram air source means for scooping external ram air from outside of an aircraft, the ram air source means having an inlet adapted to be mounted outside of an aircraft and an outlet adapted to be mounted inside of an aircraft, said ram air source means including mounting means adapted to be mounted in a surface structure of the aircraft,

opening and closing means connected to the ram air source means and extending inward in the aircraft for selectively opening and closing the ram air source means and thereby selectively scooping external ram air from outside of the aircraft,

connection means connected to the outlet of the ram air source means inside the aircraft for connecting a conduction means to the ram air source means,

ram air conduction means having first and second ends, the first end of the conduction means connected to the connection means for conducting ram air scooped from outside the aircraft by the ram air source means into the conduction means, the second end of the conduction means being freely movable within the aircraft in relation to the connection means and the ram air source means for positioning the second end of the conduction means near a face of a user,

support means connected to the second end of the conduction means for supporting the second end of the conduction means near a face of a user,

attachment means connected to the support means for attaching the support means to a user,

distribution means connected to the support means and connected to the second end of the conduction means for distributing substantially unpressurized, free flowing ram air from the ram air source and the conduction means to a facial area of a user, thus providing emergency outside ram air from outside of an aircraft to a user inside of the aircraft whereby a small aircraft controlled by the user may be flown to a safe landing area and safely landed during an emergency in which smoke or noxious fumes fill an interior of the small aircraft.

4,394,862

METERING APPARATUS WITH DOWNLINE PRESSURE MONITORING SYSTEM

Norm Shim, Glenview, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Aug. 25, 1980, Ser. No. 180,939
Int. Cl.³ A61M 5/00
U.S. Cl. 604—67 **6 Claims**

1. A flow system for infusing a fluid from a supply reservoir into the human body, comprising, in combination:

a length of flexible-walled tubing extending from the supply reservoir to the body;

metering means continuously including at least one pressure member compressively engaged to the sidewall of said tubing for occluding the lumen thereof;

drive means for advancing the point of engagement of said pressure member along a segment of said tubing to urge fluid through said tubing;

downline pressurization means comprising a plunger spring-biased against said tubing downline of said tubing segment for continuously at least partially restricting the lumen of said tubing to increase the pressure of the fluid within said segment downline of said point of engagement;

pressure sensing means including a pressure transducer operatively engaging said tubing downline of said pressurization means for producing an output signal having a level

continuously indicative of the downline pressure level in the tubing; and

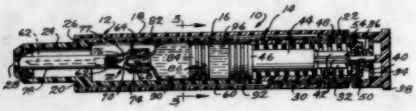
pressure monitor circuit means responsive to said output signal for terminating operation of said drive means in the event said pressure level reaches a predetermined maximum level.

4,394,863

AUTOMATIC INJECTOR WITH CARTRIDGE HAVING SEPARATE SEQUENTIALLY INJECTABLE MEDICAMENTS

Elliot Bartner, Piscataway, N.J., assignor to Survival Technology, Inc., Bethesda, Md.

Filed Oct. 23, 1981, Ser. No. 314,381
Int. Cl.³ A61M *5/00*
U.S. Cl. 604—90 **5 Claims**



1. In an automatic injecting device including an elongated housing assembly having a forward end, stressed spring means mounted within said housing so as to be released in response to a predetermined manual actuation procedure, and a medicament injection cartridge assembly mounted within said housing assembly in cooperating relation with said stressed spring means, the improvement which comprises said medicament injection cartridge assembly comprising

a medicament container,

a hypodermic needle disposed forwardly of said container mounted in a sterile condition within said housing assembly adjacent the forward end thereof,

forward seaing means for sealing the forward end of said container from said hypodermic needle,

a rearward piston mounted in the rearward end of said container for forward movement therein in slidably sealed relation thereto,

a plurality of individual dosages of different relatively incompatible liquid medicaments within said container between said forward sealing means and said piston, said plurality of dosages including a forward dosage and a rearward dosage,

movable interior sealing means within the interior of said container between said piston and said forward sealing means maintaining the individual dosages sealingly separated from one another, said interior sealing means comprising an intermediate piston between said forward and rearward dosages mounted for forward movement within said container in slidably sealed relation thereto,

means operable in response to the manual accomplishment of said manual actuating procedure and the resultant release of said stressed spring means for moving said hypodermic needle forwardly and outwardly of said housing assembly into the muscle tissue of a patient and said piston forwardly into said container so that the plurality of individual dosages therein are moved forwardly out of sealed relation with respect to said forward and interior sealing means outwardly through said needle into the muscle tissue of the patient,

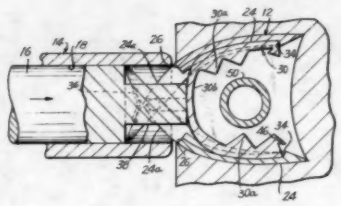
said manual actuating procedure responsive means comprising a by-pass bulge in the peripheral wall of said container adjacent the forward end thereof of an axial extent sufficient to enable the forward movement of said rearward dosage to move said intermediate piston forwardly into a by-pass position adjacent the forward end of said container during which said forward dosage is moved forwardly and outwardly through said needle and following which the forward movement of the rearward dosage continues through said by-pass bulge and outwardly through said needle.

4,394,864

APPARATUS AND METHOD FOR EFFECTING OCCLUSION OF THE VAS DEFERENS

Jeffrey Sandhaus, Rte. 9W, Snedens Landing, Palisades, N.Y. 10964

Filed Apr. 15, 1981, Ser. No. 254,393
Int. Cl.³ A61B *17/12, 17/28*
U.S. Cl. 128—321 **18 Claims**



15. Apparatus for occluding a vessel in a body, particularly the vas deferens in a vasectomy, comprising:

a locking clip delivering instrument including a pair of jaw members pivotally coupled to each other for pivotal actuation between closed and open positions, said jaw members each tapering in a forward direction to a sharp point such that said clip delivering instrument, when said jaw members are in the closed position, constitutes a sharp pointed instrument capable of puncturing body tissue, said pair of jaw members defining an interior space between them for receiving a substantially U-shaped locking clip, said interior space tapering in the direction towards said pointed ends of said jaw members when said jaw members are in the closed position,

a substantially U-shaped locking clip of the self-locking type positionable within said interior space between said jaw members such that when said jaws are in a closed position and said clip is in a position distal from said pointed ends of said jaw members, said clip is in an unlocked mode and when said instrument is actuated to an open position the clip is opened to an extent such that the vessel to be occluded is receivable therein;

means for actuating said jaw members between closed and opened positions; and

means for positioning the clip member within said interior space between said jaw members to a position proximal to said pointed ends of said jaw members such that when said jaw members are actuated to the closed position, said clip is closed and locked.

4,394,865

APPARATUS FOR DETERMINING LEVELS OF PHYSICAL LOADS

Georgy I. Sidorenko; Vladimar I. Stankevich; Vitaly V. Katsygin, and Georgy P. Lopato, all of Minsk, U.S.S.R., assignors to Belorussky Nauchnoissledovatelsky Institut Kardiologii, Minsk, U.S.S.R.

Filed Jan. 8, 1981, Ser. No. 223,269
Claims priority, application U.S.S.R., May 22, 1980, 2920298; May 22, 1980, 2920300
Int. Cl.³ A61B *5/10*
U.S. Cl. 128—782 **7 Claims**

1. An apparatus for determining levels of physical loads, comprising:

a housing;

a seismic mass constituted by a permanent magnet;

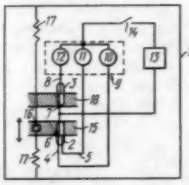
elastic suspension means for securing said seismic mass in

said housing for movement in a given direction in response to movement of a user carrying the housing;

a first switching element positioned in said housing along the direction of movement of said seismic mass and constituted by a group of magnetically operated hermetically sealed changeover contacts including a normally open contact, a normally closed contact and a common contact;

a second switching element positioned in said housing along the direction of movement of said seismic mass and constituted by a pair of magnetically operated hermetically sealed normally open contacts, one of which is connected to said common contact of said first switching element;

an indicator positioned in said housing and including a first indicating element for indicating a first, minimum level of physical load and having a first terminal and a second terminal, a second indicating element for indicating a second level of physical load greater than the minimum level and having a first terminal and a second terminal, and a third indicating element for indicating a third level of physical load greater than the second level and having a first terminal and a second terminal, said first terminal of said first indicating element of said indicator being connected to said normally open contact of said first switching element, said first terminal of said second indicating



element of said indicator being connected to said normally closed contact of said first switching element, and said first terminal of said third indicating element of said indicator being connected to the other of said normally open contacts of said second switching element;

a power supply unit having a first output terminal and a second output terminal, said first output terminal being connected to said common contact of said first switching element; and

a cut-out switch having a first terminal and a second terminal, said first terminal of said cut-out switch being connected to said second output terminal of said power supply unit and said second terminal of said cut-out switch being connected to said second terminals of said first, second and third indicating elements, said first and said second switching elements being positioned with respect to the direction of movement of said mass such that movement of said mass resulting from changes in levels of physical loads energizes said first indicating element when the level of physical load is less than the second level, energizes said second indicating element when the level of physical load is between said first and said third levels, and energizes said third indicating element when the level of physical load reaches the third level.

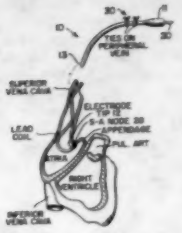
4,394,866

S-A NODE HELICAL LEAD FOR ATRIAL PACEMAKERS AND METHOD OF PLACEMENT

Howard C. Hughes, Cornwall, Pa., assignor to Research Corporation, New York, N.Y.

Filed Jan. 21, 1981, Ser. No. 226,831
Int. Cl.³ A61N 1/04
U.S. Cl. 128—785 **5 Claims**

1. An improved electrically conductive lead for at least S-A Node Atrium Contact to provide atrium pacing and sensing comprising an electrical conductor having a lumen there through, an electrode tip, said electrode tip being electrically connected to the electrical conductor adjacent one end of the conductor, and S-A Node helix, said helix extending from the electrode tip toward the other end of the electrical conductor



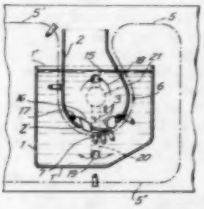
a distance of 6 to 12 inches and having at least one-and-a-half turns and a non-conductive biocompatable coating encasing the electrical conductor except the electrode tip.

4,394,867

SUCTION ARRANGEMENT IN A BOTTLE-CLEANING MACHINE FOR REMOVING OF LABELS FROM BOTTLES

Joachim Ciongwa; Werner Heckmann, both of Dortmund; Klaus Jendrichowski, Holzwickede; Karl Quest, Dortmund; Christian Rüppell, Unna, and Wolfgang Süshardt, Dortmund, all of Fed. Rep. of Germany, assignors to Holstein und Kappert GmbH, Dortmund, Fed. Rep. of Germany

Filed Jun. 15, 1981, Ser. No. 275,514
Int. Cl.³ B08B 15/00
U.S. Cl. 134—104 **7 Claims**



1. In a bottle-cleaning machine, a suction arrangement for removing of labels from bottles comprising a label-softening container adapted to contain a liquid and having a bottom; a plurality of elongated bottle-receiving cells having each an open end for insertion of bottles with labels into the cells and for withdrawing the bottles after the labels have been removed therefrom, said bottle-receiving cells having each opposite said open end a plurality of openings for the passage of liquid into the cells, said cells having axes and retaining the bottle in axially displaceable manner; conveyor means for transporting the cells with bottles inserted therein through said label-softening container and above its bottom; means for causing a stream of liquid from said softening container to detach and transport the labels and including wall means defining a suction compartment within said label-softening container and having a bottom portion upwardly spaced from said bottom and being formed in said bottom portion with a single opening having a width at least equal to the width of said open end of each cell as considered in the direction of movement of said cell, said conveyor means being arranged to transport said bottle-receiving cells with said open ends thereof under and closely adjacent to said bottom portion of said wall means past said single opening therein, said means for causing a stream of liquid further including means for sucking liquid from said suction compart-

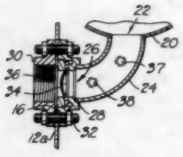
ment arranged so that a stream of liquid forcedly flows upwardly from said label-softening container via said openings of said cells through said cells, then leaves said cells through said open ends thereof, flows upwardly into said suction compartment through said opening in said bottom portion of said wall means of said suction compartment, and then is discharged into said label-softening container, whereby under the action of the suction-caused stream of liquid the labels are loosened from the bottles inside said cells, transported through said open ends of the cells into said suction compartment, and then withdrawn from the latter; and means arranged above and adjacent said cells to prevent said bottles to leave said cells through said open ends under the influence of the stream of liquid passing therethrough and tending to displace the bottles.

4,394,868

HORIZONTAL DISCHARGE ASSEMBLY FOR VERTICALLY ORIENTED FIRE EXTINGUISHER

Bruce McLelland, Blue Springs, Mo., assignor to Fike Metal Products Corporation, Blue Springs, Mo.

Filed Dec. 1, 1980, Ser. No. 211,696
Int. Cl.³ F16K *13/04*
U.S. Cl. 137—68 A **6 Claims**



1. A horizontal discharge hazard suppression assembly, comprising:

a tank for holding a pressurized hazard suppression material and having a lower outlet;

an elongated, gently arcuate tubular elbow operatively secured to said tank outlet and in open communication with the interior of said tank;

a selectively operable, rupturable disc;

means mounting said disc in closing relationship to said elbow and adjacent the outlet end of said elbow remote from said tank;

structure for mounting said tank and elbow adjacent a zone to be protected from hazard, with said tank being generally upright and said outlet end of said elbow being oriented generally horizontally, such that said material is disposed within said tank and elbow and bears directly against said disc; and

means for rupturing said disc in response to the presence of a preselected hazardous condition within said zone such that said material flows directly from said outlet end of said elbow into said zone.

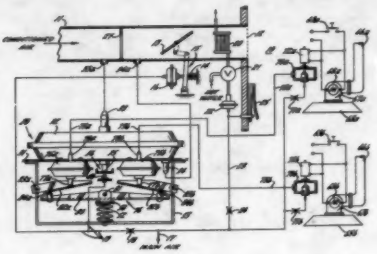
4,394,869

RESET CONTROLLER WITH IMPROVED INPUT MECHANISM

Gilbert H. Avery, Memphis, Tenn., assignor to Barber-Colman Company, Rockford, Ill.

Filed Dec. 16, 1981, Ser. No. 331,362
Int. Cl.³ G05D *16/06*
U.S. Cl. 137—82 **5 Claims**

1. A pneumatic controller for providing a pneumatic control signal, said controller comprising a pneumatic control signal bleed nozzle, a flapper associated with said nozzle, means for applying a force tending to move said flapper in one direction relative to said nozzle, a bias member for applying a force tending to move said flapper in the opposite direction relative to said nozzle, said pneumatic control signal varying as a function of the position of said flapper, and mechanism for producing a force to alter the force applied by said bias member to said flapper, said mechanism comprising a pivoted lever for altering the force applied by said bias member to said flapper as said lever is swung back and forth, said mechanism further comprising first and second actuators for producing first and second forces as functions of first and second variable signals, respectively, the improvement in said pneumatic controller comprising, means for receiving said first and second forces



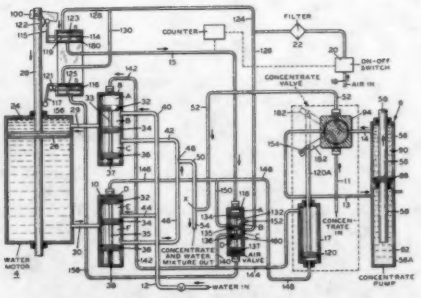
and for causing said lever to be positioned with a force which varies as a function of the sum of the weighted values of said first and second forces, said force receiving means comprising a second lever extending transversely of and pivotally mounted on said one lever to turn about a predetermined axis relative to said one lever, said actuators acting on said second lever so as to cause said second lever to pivot in one direction when said first force increases and to pivot in the opposite direction when said second force increases.

4,394,870

SYSTEM FOR MIXING CONCENTRATE AND WATER TO FORM FOUNTAIN SOLUTION FOR OFFSET PRINTING PRESSES

John MacPhee, Rowayton; David Wirth, Norwalk, both of Conn., and John St. John, Blue Jay, Calif., assignors to Baldwin-Gegenheimer Corporation, Stamford, Conn.

Continuation of Ser. No. 793,716, May 4, 1977, abandoned. This application Oct. 22, 1981, Ser. No. 314,012
Int. Cl.³ G05D *11/02*
U.S. Cl. 137—99 **5 Claims**



1. A system for continuously and automatically mixing concentrate and water to form fountain solution comprising:

(a) a water motor including a reciprocating piston having a stroke of fixed distance;

(b) first water motor valve having first and second operating chambers;

(c) a second water motor valve having a first and second operating chambers;

(d) a first conduit at one end of said water motor adapted to communicate with first and second operating chambers of said first water motor valve;

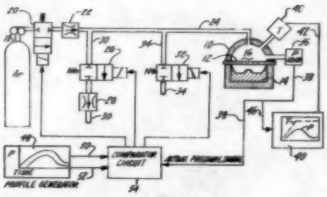
(e) a second conduit at the other end of said water motor adapted to communicate with said first and second operating chambers of said second water motor valve;
(f) third water conduit means extending from one of said operating chambers in said first and second water motor valves;
(g) a concentrate pump having a cylinder and piston therein and adjustable means interconnecting said water motor piston and said concentrate pump piston;
(h) a concentrate valve in fluid communication with said concentrate pump;
(i) a concentrate conduit extending from said concentrate valve into fluid communication with said third water conduit means to form a mixing conduit for mixing concentrate and water;
(j) pneumatic means operatively associated with said water motor pistons and said water motor valves to move said water motor piston to cause water to flow into or out of said first and second operating chambers of said first and second water motor valves and into said third conduit means;
(k) pneumatic means operatively associated with said concentrate pump and said concentrate valve for causing concentrate to flow through said concentrate valve and into said mixing conduit;
(l) pneumatic valve means for actuating said pneumatic means; and
(m) means connected to said reciprocating water motor piston for actuating said pneumatic valve means.

4,394,871

PROGRAMMABLE PRESSURE REGULATOR FOR TITANIUM SUPERPLASTIC FORMING APPARATUS

Dennis C. Czajka, and David P. Nordstrand, both of Bellevue, Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Dec. 31, 1980, Ser. No. 221,786
Int. Cl.³ G05D *11/00*
U.S. Cl. 137—115 **7 Claims**



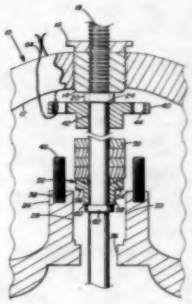
1. An apparatus for controlling gas pressure in a metal forming chamber comprising:
a source of pressurized gas;
first electrically responsive valve means interposed between said source of pressurized gas and said forming chamber and operable in response to an electrical signal to admit gas from said pressurized source to said forming chamber;
second electrically responsive valve means coupled to said forming chamber, said second valve means being operable in response to an electrical signal to bleed gas from said forming chamber;
pressure-sensing means coupled to said forming chamber, said sensing means being operable to produce a signal representative of the pressure of said gas in said chamber;
a profile generator operable to produce time varying high and low set point signals representative of preselected upper and lower pressure limits of a series of linear profile segments, each segment enduring for a predetermined period of time during which said set point signal varies linearly from a first set point level to a second set point level;
comparator means for comparing said electrical signal from said pressure-sensing means with each of said high and low set point signals, said comparator means operating to apply an electrical signal to said first electrically responsive valve means in the event the difference between said electrical signal from said pressure-sensing means and said low set point signal represents a pressure in said forming chamber less than said lower pressure limit, said comparator means further operating to provide an electrical signal to said first electrically responsive valve means in the event the difference between said upper set point signal and said signal from said pressure-sensing means represents a gas pressure in said chamber greater than said upper pressure limit.

4,394,872

VALVE ASSEMBLY FOR PACKING REMOVAL

Howard T. Schobl, Coraopolis, Pa., assignor to Schobl Enterprises, Inc., Imperial, Pa.

Filed Jan. 5, 1981, Ser. No. 222,535
Int. Cl.³ F16K *41/02, 41/14*
U.S. Cl. 137—315 **8 Claims**



1. In a valve including a valve body having a flow chamber with a valve seat therein and a closure member to move in said flow chamber relative to said seat, the combination comprising,
a yoke supported by said valve body,
a bonnet having a packing chamber supported by said valve body,
a valve stem extending from said yoke through said packing chamber into said flow chamber for supporting said closure member,
stem drive means supported by said yoke and spaced from said bonnet for displacing said valve stem in the direction of its length along said packing chamber,
a packing gland detachably mounted and directly connected to the bonnet for slideably receiving said stem with a lower portion of said packing gland extending into said packing chamber for holding packing therein,
said packing circumposed about an intermediate portion of said stem within said packing chamber below said lower portion of said packing gland, and
packing removal means circumposed about said stem below said packing, said packing removal means including a drive ring adapted to engage a bottom portion of said packing, said packing removal means further including a collar member on said valve stem in said flow chamber to engage said drive ring independently of said closure member for displacing said packing from said packing chamber externally of said bonnet, said packing removal means applying an upwardly directed force to said packing by operation of said stem drive means after detachment of said packing gland from said bonnet.

4,394,873

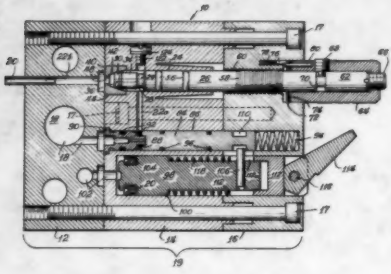
FLUID VALVE WITH COMPRESSIBLE CHANNEL

Thomas G. Switall, Wheeling, Ill., assignor to Ryco Graphic Manufacturing, Inc., Wheeling, Ill.

Filed Apr. 28, 1980, Ser. No. 145,370

Int. Cl.³ F16K *31/143*

U.S. Cl. 137—613 **16 Claims**



1. A fluid valve for regulating the delivery of fluid through a passageway, said fluid valve comprising:

a. a valve seat in the passageway, said valve seat including an inside wall slightly tapered along the longitudinal axis of the passageway such that a cross-sectional dimension across said inside wall decreases in the downstream direction;

b. a flow adjustment member at least partially disposed in, and adjustable along the longitudinal axis of the passageway and including at its lower end a nozzle extending from and of reduced diameter relative to an upper portion of said flow adjustment member;

c. an elastomeric valve element in said passageway upstream of said valve seat and having a fluid conducting channel therein, at least the portion of said valve element having a cross-sectional dimension larger than the smallest cross-sectional dimension of the tapered inside wall and said valve element being attached to said flow adjustment member nozzle for adjustable movement along said valve seat so that said valve element portion will be increasingly radially squeezed as it is moved in the downstream direction while in engagement with said tapered inside wall, and said valve element will be allowed to radially expand, as it is moved by said adjustment member in the upstream direction,

d. a fluid conducting conduit through said flow adjustment member in fluid communication with said valve element channel; and

e. fluid interruption means disposed upstream of said valve element and said valve seat for interrupting the fluid flow to said passageway.

4,394,874

VALVE CONSTRUCTION FOR QUICK-CLOSURE COUPLING

Friedrich C. Walter, Karlsruhe, Fed. Rep. of Germany, assignor to Argus Verwaltungsgesellschaft mbH, Ettlingen, Fed. Rep. of Germany

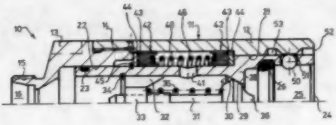
Filed Apr. 10, 1981, Ser. No. 252,943

Claims priority, application Fed. Rep. of Germany, Apr. 23, 1980, 3015485

Int. Cl.³ F16L *37/28*

U.S. Cl. 137—614.02 **12 Claims**

1. A socket valve, for use with a cooperating plug valve of a quick-closure coupling for fluid lines, comprising: a fixed housing; a sliding sleeve axially movable in said housing and having an end recess for insertion of a plug valve portion; a closure member on said sliding sleeve and biased to a closure position; an annular chamber defined between said sliding sleeve and said housing and having one end proximal to and another end remote from said recess; at least one axially movable annular piston bounding said chamber at least at said other end thereof; locking means in the region of said recess for locking the plug valve in the latter, said sleeve being movable axially out of a securing position in which said locking means lock said plug valve, into release positions in which the locking means release the plug valve; means for admitting pressure fluid into said chamber to urge said piston to bear in said securing position of said sleeve against shoulders of said sleeve and said housing, respectively, said shoulders being annular shoulders; and biasing means urging said sleeve to said securing position, ends of said chamber being closed off with said annular piston, said piston being subjected to said fluid and effect of said biasing means, said piston being positioned for preventing parts of said coupling from separating when subjected to the force of said pressure fluid, said chamber closed off with said piston subjecting said sliding sleeve and said housing to fluid pressure for maintaining said sliding sleeve in sealing position.



4,394,875

ACTUATOR FOR A MINE ROOF SUPPORT UNIT

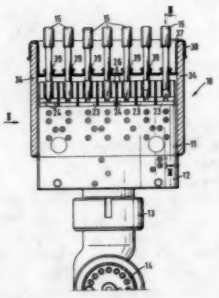
Walter Weirich, and Werner Grommas, both of Dortmund, Fed. Rep. of Germany, assignors to Gewerkschaft Eisenhutte Westfalia, Lunen, Fed. Rep. of Germany

Filed Mar. 24, 1981, Ser. No. 247,029

Claims priority, application Fed. Rep. of Germany, Mar. 29, 1980, 3012291

Int. Cl.³ F16K *31/52*

U.S. Cl. 137—636.1 **11 Claims**



1. An actuator for use in the hydraulic control of a mine roof support unit, the actuator comprising a housing, a plurality of pairs of valves, and a respective common rocker arm for actuating the valves of each pair of valves, the valves of each pair of valves being detachably mounted in a respective pair of generally parallel bores formed in the housing, each of the rocker arms being mounted on a respective cover plate which covers the mouths of the corresponding bores, and each of the cover plates being detachably mounted on the housing, wherein a sleeve is detachably mounted on the housing, the sleeve being made of resilient material and extending away from the housing to provide a protective surrounding for the rocker arms, and wherein a resilient protective bellows is arranged on, and extends across, the sleeve, the rocker arms

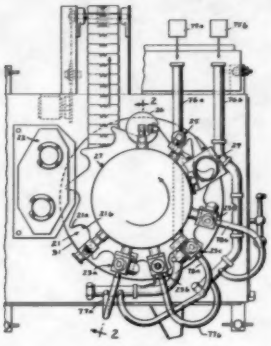
passing through respective apertures in the bellows which thereby comprises means for biasing each of the rocker arms into a position in which neither of the associated valves is actuated.

4,394,876

CONTAINER FILLING MACHINE

Jonathan G. Brown, Rockford, Ill., assignor to Anderson Bros. Mfg. Co., Rockford, Ill.

Filed Nov. 2, 1981, Ser. No. 316,982
Int. Cl.³ B65B *3/04*
U.S. Cl. 141—137 **13 Claims**



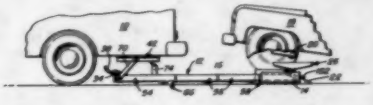
1. A filling machine having a stationary support structure, conveyor means for advancing containers along a generally horizontal path with adjacent containers spaced apart a preselected pitch distance, at least one valved dispenser assembly for dispensing product into containers as they are advanced by the conveyor means, the valved dispenser assembly including a dispenser body having a product inlet and a downwardly opening product outlet and dispenser valve means on the dispenser body movable relative thereto between a closed position blocking flow from the product inlet to the product outlet and an open position for passing product from the product inlet to the product outlet, dispenser mounting means including crank means mounted on the stationary support structure for rotation about a generally horizontal crank axis and having an eccentric connected to the dispenser body to move the dispenser body in a generally upright closed loop course having horizontal and vertical components of movement, means for driving the crank means in timed relation with the conveyor means and such that the horizontal component of movement of the dispenser body is in the direction of movement of the conveyor means during the lower half of the closed loop course and in the opposite direction during the upper half of the closed loop course, fluid pressure operated valve actuator means mounted on the dispenser body for movement therewith and having an output member movable relative thereto and connected to the dispenser valve means for rapidly moving the dispenser valve means to its open position when the fluid pressure operated valve actuator means is operated to a first condition and for rapidly moving the dispenser valve to its closed position when the fluid pressure operated valve actuator means is operated to a second condition, control means for controlling application of fluid pressure to said fluid pressure operated valve actuator means to operate said fluid pressure operated valve actuator means to said first condition as the dispensing body moves through at least a portion of the lower half of its closed loop course and to operate said fluid pressure operated valve actuator means to said second condition during the remainder of the closed loop course.

4,394,877

WASTE FLUID RECEPTACLE

Lance Whyte, 5307 Queensberry Ave., Springfield, Va. 22151

Filed Aug. 6, 1981, Ser. No. 290,525
Int. Cl.³ B65B *3/04*
U.S. Cl. 141—98 **13 Claims**



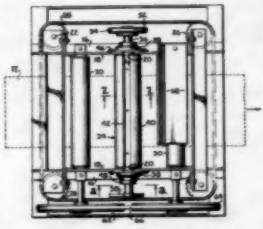
1. A waste fluid drain assembly mountable on and selectively manipulated for extension and retraction relative to a service vehicle for selective alignment beneath a fluid reservoir in a vehicle to be serviced, said assembly comprising a waste fluid receptacle, vehicle engagable support means for mounting said assembly on a service vehicle in underlying depending relationship therefrom, and selectively extensible and retractable positioning means engaged between said fluid receptacle and said support means for selectively adjusting the position of the receptacle relative to the support means between a stored position beneath an assembly mounting service vehicle and an extended portion wherein the receptacle is located remote from the service vehicle in alignment beneath a fluid reservoir of a vehicle to be serviced, whereby waste fluid can be drained from a fluid reservoir and into said receptacle.

4,394,878

COMBINATION PLANAR MOLDER

Verle L. Rice, and Dwight E. Check, both of Harrisonville, Mo., assignors to R. B. Industries, Pleasant Hill, Mo.

Filed Jul. 16, 1981, Ser. No. 283,946
Int. Cl.³ B27C *1/14*
U.S. Cl. 144—131 **9 Claims**



1. A combination planar molder for wood comprising:
a support framework;
shaft means mounting either a planing knife or a molding bit;
means for removably mounting said shaft means on said framework and comprising a sheave rigid with said shaft and bearing means mounted in said framework for pivotal movement and adapted to receive one end of said shaft means;
prime mover means for turning said shaft means; and
drive means for moving a length of wood past said planing knife or said molding bit.

4,394,879

METHOD OF REPAIRING DAMAGED KEYWAY

William A. Reynolds, 311 Graham St., Emporia, Kans. 66801

Filed Jun. 8, 1981, Ser. No. 271,678
Int. Cl.³ B22D *23/00*
U.S. Cl. 164—76.1 **6 Claims**

1. A method of repairing a deformed or damaged keyway in

a shaft or the like to provide a finished keyway having desired length and width dimensions, comprising the steps of:

providing an insert having length and width dimensions corresponding to the dimensions of the desired finished keyway;

placing said insert into the damaged keyway;

filling the free space between the defining walls of the damaged keyway and said insert with metallic weld material; and

removing said insert.

4,394,880

METHOD OF PREVENTING DRILL STRING OVERFLOW

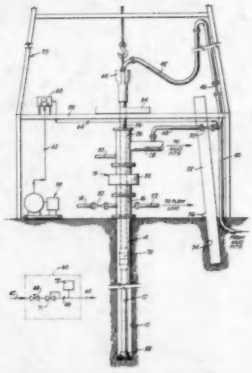
Ben V. Faulkner, Rte. 1, Box 15, Washington, Okla. 73093

Continuation-in-part of Ser. No. 202,797, Oct. 31, 1980, Pat. No. 4,351,400. This application Apr. 27, 1981, Ser. No. 257,754

The portion of the term of this patent subsequent to Sep. 28, 1999, has been disclaimed.

Int. Cl.³ E21B *21/14*

U.S. Cl. 175—69 **5 Claims**



1. A method of preventing drilling fluid overflow when adding or removing drill pipe sections to or from a drill string disposed in a well bore comprising the steps of:

introducing a gas into said drill string until a predetermined volume thereof is introduced therein;

introducing drilling fluid into said drill string after introducing said gas until a predetermined volume thereof is introduced therein and said gas is pressurized thereby displacing drilling fluid originally contained in said drill string downwardly within said drill string and upwardly within the annulus between said drill string and said well bore to lower the level of said drilling fluid in said drill string a distance such that upon releasing the introduced pressurized gas and drilling fluid from said drill string and removing drilling fluid and gas therefrom, the resulting level of drilling fluid in said drill string is below the level at which said drill pipe sections are added to or removed from said drill string;

releasing said introduced pressurized gas and drilling fluid from said drill string whereby said gas and drilling fluid flow upwardly through said drill string and drilling fluid and gas are removed therefrom; and then

adding or removing drill pipe sections to or from said drill string.

4,394,881

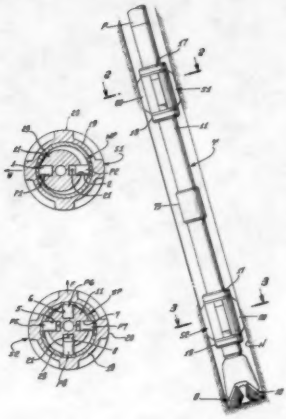
DRILL STEERING APPARATUS

Kirk R. Shirley, 15719 Tumbling Rapids, Houston, Tex. 77084

Filed Jun. 12, 1980, Ser. No. 158,948

Int. Cl.³ E21B *7/08*

U.S. Cl. 175—76 **27 Claims**



1. A steering tool adapted to control the angle and direction of a rotary well drilling string in the drilling of a well bore through earth formation, said tool comprising: an elongated body having an upper end connectible with the drilling string and a lower end connectible with the drilling string adjacent to the bit, a bore through said body for the flow of drilling fluid through the drilling string and the bit; master piston means adjacent the upper end of said body including a radially shiftable piston inwardly shiftable by engagement of the master piston means with the low side of the well bore wall; slave piston means adjacent the lower end of said body including a plurality of circumferentially spaced radially shiftable pistons for applying lateral thrust on the lower end of said body upon radial outward movement said body having a valve chamber between said master piston means and said slave piston means; fluid passage in said body establishing communication between said valve chamber and each of said slave piston means; and selective valve means in each of said passages between said valve chamber and said slave piston means for establishing fluid pressure communication through said valve chamber between said master piston means and selected passages between said valve chamber and said slave piston means to cause radial outward movement of a selected slave piston upon radial inward movement of said master piston.

4,394,882

CONTINUOUS CHAIN BIT WITH DOWNHOLE CYCLING CAPABILITY

Don F. Ritter; Jack A. St. Clair, and Henry K. Togami, all of Albuquerque, N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

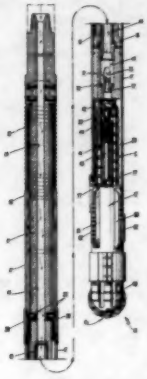
Filed Mar. 17, 1981, Ser. No. 244,573

Int. Cl.³ E21B *11/06*

U.S. Cl. 175—89 **17 Claims**

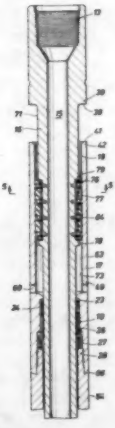
1. A continuous chain bit for hard rock rotary drilling and down hole cycling comprising:

a support body;
an auxiliary slidable drill head assembly on said body;
means for effecting rotation of the drill head assembly upon rotation of the support body;
means to shift said head assembly longitudinally relative to said body;



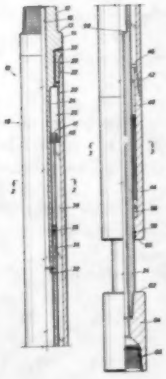
an endless chain on said head assembly having links for cutting into the rock and moveable along a feed path; and
finger means carried by the support body to engage and hold said chain with respect to the support body while shifting said head assembly longitudinally relative to said support body, whereby said chain may be moved along the feed path and cycled to present new links for drilling.

4,394,883
WELL JAR
Edward L. Briscoe, Sheridan, Tex., assignor to Dailey Oil Tools, Inc., Houston, Tex.
Filed Nov. 3, 1980, Ser. No. 203,527
Int. Cl.³ E21B *31/107*
U.S. Cl. 175—304 **20 Claims**



1. A rotary well jar subject to severe lateral and longitudinal drill string forces in a fluid-filled wellbore and the well jar having an elongate body with an axial passageway for fluid flows, the body having threaded connections at its ends for assembly into a string of well pipe, the body formed of a tubular barrel with an annulus exposed to well fluid between the mandrel and barrel, fluid seals positioned at one end of the annulus forming an elongate chamber isolated from the fluid in the wellbore and latch means in the chamber to releasably latch the mandrel to the barrel until the latch means are selectively released for delivering an impact between hammer and anvil surfaces on the mandrel and barrel, the rotary well jar comprising;
(a) a plurality of individual resilient vibration snubbers longitudinally, individually mounted circumferentially around said mandrel and at an upper end of said annulus above said latch means and also aligned longitudinally in said annulus between said mandrel and said barrel;
(b) said snubbers spaced longitudinally from said fluid seal at a location to slideably engage with said barrel through out its telescoping movement along said mandrel;
(c) said snubbers disposed in circumferential spaced apart relationship about said mandrel with spaces forming flow channels therebetween in said annulus to accomodate well fluid flows when said mandrel and said barrel are rotated with the string of well pipe in the well bore;
(d) said snubbers having a curved exposed surface for engaging the inner surface of said barrel to dampen vibrational movements between said mandrel and said barrel during their telescoping movements for preventing injury to said fluid seals; and,
(e) said snubbers having a diameter, when not confined, larger than the internal diameter of said annulus to define an interference fit on positioning of said snubbers in said annulus.

4,394,884
SHOCK SUB
Uvon Skipper, 11710 Scottsdale Rd., Stafford, Tex. 77477
Filed Jul. 28, 1980, Ser. No. 172,662
Int. Cl.³ E21B *17/20*
U.S. Cl. 175—321 **12 Claims**



1. A shock absorbing tool to be installed in a drill string above the drill bit, comprising:
(a) an upper mandrel which includes
(1) an upper end threaded connector for connection into a drill string;
(2) an outer tubular sleeve below said threaded connector and having a lower end seal around the interior thereof;
(3) an inner tubular sleeve concentric within said outer tubular sleeve;
(4) an annular cavity defined between said inner and outer tubular sleeves;
(5) means for closing said annular cavity at the upper end;
(6) alignment spline means extending axially into said annular cavity, said alignment spline means supported

interiorally of said outer tubular sleeve and further being located above said lower end seal;

(b) a lower mandrel which includes

(1) a lower end threaded connector for connection to a drill bit at the bottom of a drill string;

(2) an upstanding tubular sleeve;

(3) a bottom fitting joined to said connector and to said upstanding sleeve and further including an upwardly facing shoulder adapted to abut the lower end of said outer tubular sleeve to limit axial displacement of said outer tubular sleeve relative to said bottom fitting shoulder;

(4) a first set of splines on said upstanding sleeve meshing with a second set of splines for longitudinal displacement therebetween wherein said first and second sets of splines prevent relative rotation and permit relative axial displacement;

(5) wherein said first and second sets of splines are located for meshing above said lower end seal to define a lower fluid chamber above said lower end seal;

(6) wherein said lower end seal forms a leakproof seal against the exterior surface of said upstanding sleeve;

(7) wherein said upstanding sleeve extends above said meshed first and second sets of splines into said annular cavity to define an upper fluid chamber therein;

(8) seal means on said upstanding sleeve sealing against said upper mandrel to limit leakage from said upper fluid chamber on telescoping movement of said upstanding sleeve in said annular cavity;

(c) means for introducing a charge of compressable fluid into said annular cavity;

(d) wherein said first and second sets of splines telescope relative to one another, and said splines are constructed with a specific clearance to define a lengthwise flow path along said meshed splines between said upper and lower fluid chambers;

(e) a lengthwise axial passage for flowing drilling mud through said shock absorbing tool wherein said passage extends along the interior of said inner tubular sleeve and also serially through said upstanding sleeve and said fitting therebelow wherein said upstanding and inner sleeves telescope relative to one another and further wherein said sleeves include shoulder means exposed to mud flow along said passage;

(f) shoulder means, on exposure to drilling mud under pressure, are located and arranged to form a mud pressure depending force forcing said upper mandrel and lower mandrel apart and wherein the weight on the drill string forces said upper and lower mandrels towards each other; and

(g) wherein said upper and lower mandrels move relatively as fluid is transferred between said upper and lower fluid chambers along the flow path of said meshed splines.

4,394,885

LOAD RECEIVER WITH IMPROVED FIXING MEANS

Gilbert V. Dauge, Lagny; Jacques F. Langlais, Coudray Montceaux, and Daniel J. Quehen, Chilly Mazarin, all of France, assignors to Testut Aequitas, Paris, France

Filed Jan. 28, 1981, Ser. No. 229,156

Claims priority, application France, Feb. 4, 1980, 80 02377

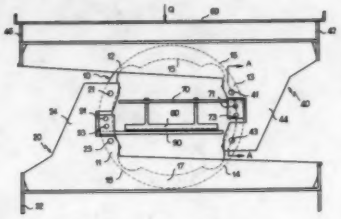
Int. Cl.³ G01G *3/12, 21/23*

U.S. Cl. 177—210 C **8 Claims**

1. A load receiver for use in a weighing scale or the like comprising:

a solid member having opposed lateral surfaces and at least one constricted zone arranged to provide an elastic response to stresses;

first and second support members, each of said support members including opposed connector portions for supporting said solid member therebetween; and



attachment means rigidly connecting said connector portions to said solid member with said connector portions in fixed spaced relationship with the lateral surfaces of said solid member.

4,394,886

STEERING GEAR WITH STEERING-ARM LEVER

Uwe Rathje, and Manfred Lappe, both of Dortmund, Fed. Rep. of Germany, assignors to O&K Orenstein & Koppel Aktiengesellschaft, Berlin, Fed. Rep. of Germany

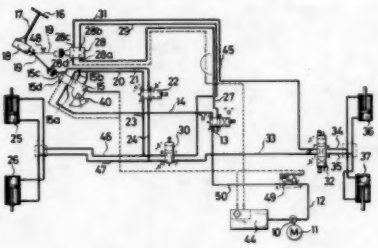
Filed Jan. 28, 1980, Ser. No. 116,358

Claims priority, application Fed. Rep. of Germany, Jan. 26, 1979, 2902927

The portion of the term of this patent subsequent to Apr. 22, 1997, has been disclaimed.

Int. Cl.³ B62D *5/08*

U.S. Cl. 180—140 **4 Claims**



1. A steering gear with pitmans arm, steering tie rod and steering gear connecting rod for a vehicle which is drivable on the road and in terrain on wheels, with a steering mechanism which is actuated selectively hydraulically supported mechanically or purely hydraulically by means of hydraulic cylinders and electromagnetic valves, and a universal shaft which is connected with the steering wheel changing from the hydraulically supported system over to the purely hydraulically operating system by selectively connecting said universal shaft with one of two systems which serve the actuation of the steering mechanism, wherein in combination one of said systems comprises a steering transmission and the other of said systems includes a steering valve, said steering transmission and said steering valve being selectively actuated by said steering gear by selective connection with said universal shaft, respectively, said hydraulic cylinders include hydraulic cylinders of a front axle and hydraulic cylinders of a rear axle of the vehicle, further comprising

a hydraulic pump operatively connected to both of said systems,

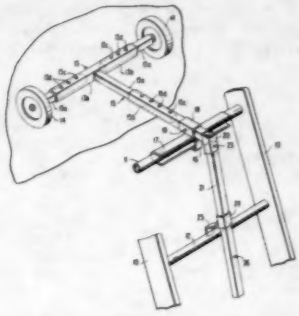
motor means for driving said pump,
a plurality of control valves,
a flow control- and pressure limit-valve,
first conduits and said flow control- and pressure limit-valve connecting said pump to a first of said control valves,
a first line being connected to said first control valve and to said steering transmission,
second lines are connected to said steering transmission and to a second of said control valves, said second control valve constituting a two-way control valve,
third lines connecting said second control valve operatively with said hydraulic cylinders of the front axle of the vehicle,
a fourth line being connected to said first control valve and to said steering valve,
a fifth line being connected to said steering valve and a third of said control valves,
a sixth line being connected to said hydraulic cylinders of the front axle,
a seventh line being connected to said steering valve and to a fourth of said control valves,
an eighth line being connected to said third and fourth control valves,
a ninth line being connected to said third control valve and to said hydraulic cylinders of the front axle,
two tenth lines connecting said fourth control valve with said hydraulic cylinders of the rear axle,
said hydraulic cylinders of said rear axle including pistons and piston rods connected thereto, each of said hydraulic cylinders in cooperation with said pistons defining a piston-side chamber and a piston-rod-side chamber,
one of said tenth lines connects to said piston-side chamber of one of said hydraulic cylinders of the rear axle and to the piston-rod-side chamber of the other of said hydraulic cylinders of the rear axle and the other of said tenth lines connects to the piston-rod-side chamber of said one of said hydraulic cylinders of the rear axle and to the piston-side-chamber of the other of said hydraulic cylinders of the rear axle,
a first selective operative pressurized oil flow path comprising in order: said first conduits and said flow control- and pressure limit-valve to said first control valve, said fourth line, said steering valve, said fifth line connecting to said third control valve, said third control valve, said eighth line, said fourth control valve and said another of said tenth lines connecting to the piston-rod-side chamber of said one of said hydraulic cylinders of the rear axle and to the piston-side chamber of the other of said hydraulic cylinders of the rear axle,
a second selective operative pressurized oil flow path comprising in order: said first conduits and said flow control- and pressure limit-valve to said first control valve, said fourth line, said steering valve, said seventh line connecting to said fourth control valve, said fourth control valve, said one of said tenth lines connecting to the piston-side chamber of said one of said hydraulic cylinders of the rear axle and to the piston-rod-side chamber of the other of said hydraulic cylinders of the rear axle,
said steering wheel, said steering column and said universal shaft constituting means for selecting one of said first and second selective operative pressurized oil flow paths, respectively, depending on the turning of said steering wheel,
other selective operative pressurized oil flow paths through selective of said lines and selective of said control valves to said hydraulic cylinders of said front axle, and respectively, to said hydraulic cylinders of said rear axle,
said control valves being selectively switched such that any one of said selective operative pressurized oil flow paths is operative with flow of pressurized oil therethrough.

4,394,887

LADDER STANDOFF DEVICE

Donald E. Spinks, 2808 Gennessee Ave., West Palm Beach, Fla. 33409

Filed Oct. 5, 1981, Ser. No. 308,871
Int. Cl.³ E06C 7/48
U.S. Cl. 182—214 **10 Claims**



1. A ladder standoff device adapted to be readily attached to and detached from a ladder and adapted, when attached, to be manually varied in position by a person standing on the ladder thereby to vary the orientation of the ladder relative to an adjacent wall structure, said device comprising an elongated axle member having a pair of wheels rotatably mounted at opposing ends thereof for selective rolling engagement with and along a wall structure adjacent the ladder, an elongated standoff bar one end of which is attached to said axle member at a position between said wheels, said standoff bar extending away from said axle member at substantially right angles thereto, first attachment means on said standoff bar, said first attachment means comprising fixed abutment means attached to said standoff bar and extending outwardly of said standoff bar, said fixed abutment means being adapted to be positioned adjacent one side of a rung of the ladder, and movable abutment means adapted to be variably positioned along said standoff bar relative to the opposite side of the ladder rung in opposed relation to said fixed abutment means, said fixed and movable abutment means cooperating with one another to provide a pivotal attachment of said standoff bar on the said ladder rung, handle means attached to the other end of said standoff bar, said handle means being operative upon manual manipulation to pivot said standoff bar about said pivotal attachment thereby to vary the position of said axle member and wheels relative to the adjacent wall structure, and second attachment means mounted on said handle means for selective releasable engagement with a portion of the ladder spaced from the said ladder rung to lock said standoff device against pivotal movement about the said ladder rung.

4,394,888

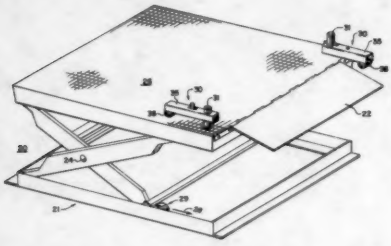
BRIDGING BAR ATTACHMENT MEANS FOR BI-ELEVATIONAL PLATFORM LIFT

David E. Clarke, St. Charles, Ill., assignor to Advance Lifts, Inc., St. Charles, Ill.

Filed Jun. 5, 1981, Ser. No. 270,995
Int. Cl.³ B66B 9/00
U.S. Cl. 187—1 R **6 Claims**

1. Bridging bar attachment means for use with bi-elevational platform lifts having a platform member which is pivotally attached on one end portion thereof and the opposite end portion thereof being free for angular movement to present desired angular positions of the platform member including in combination post means connectible to the platform level approximate to the free end portion thereof and extending upwardly generally perpendicularly therefrom to a predeter-

mined height, bridging bar frame means being pivotally connected to the post means and extending generally perpendicularly therefrom to define a free end portion thereof, the briding bar frame means including on the free end portion thereof generally rounded and protruding shoulder means having a rounded contact surface thereon, the bridging bar frame means being pivotal with respect to the post means to be selectively positioned in a first extended position extending outwardly from the free end portion of the platform member, first restraining means for restraining the bridging bar frame means against movement with respect to the post means with the



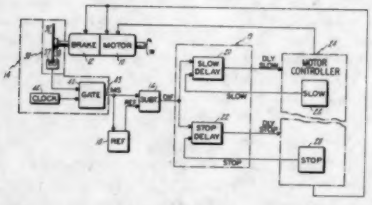
bridging bar frame means in the first extended position thereof, the bridging bar frame means alternatively being selectively positioned in a second and non-extending position with respect to the platform member, and second restraining means for restraining the bridging bar frame means against movement with respect to the post means with the bridging bar frame means in the second non-extended position whereby with the bridging bar frame means extended from the platform member, the bridging bar frame means are useful to suspend the free end portion of the platform member from an adjacently spaced vertically offset loading level.

4,394,889

MODIFIED SLOWDOWN AND BRAKING OF AN ELEVATOR CAR

John E. Gray, Milperra, Australia, assignor to Otis Elevator Company, Farmington, Conn.

Filed Mar. 25, 1980, Ser. No. 261,240
Claims priority, application Australia, Apr. 5, 1979, PD8347
Int. Cl.³ B66B 1/32
U.S. Cl. 187—29 R **21 Claims**



1. An elevator system comprising a car, a motor, having a shaft coupled to the car, and brake system for stopping the car, a motor and brake operation control system including a system for generating a control signal to initiate car stopping operations at a fixed distance from each floor based upon a predetermined maximum car velocity (V MAX), and a load compensating system for modifying said operation based upon actual car velocity (V), said elevator system characterized in that said compensating system comprises:

a motor speed sensor coupled to the motor shaft for producing, at least once during each motor revolution, a digital motor speed (MS) signal reflecting V in relation to the angular velocity of the shaft,

a reference signal generator for producing a predetermined digital reference (REF) signal manifesting the motor speed at V MAX,

means for producing, from said REF and MS signals, a difference (DIF) signal reflecting the difference between V MAX and V, and

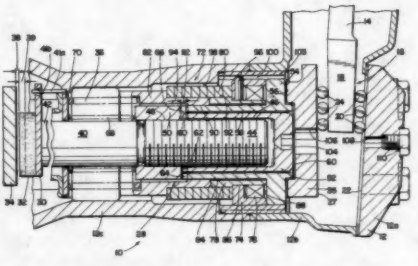
means triggered by the control signal from the motor and brake operation system and responsive to said DIF signal for initiating the stopping operations after a delay following production of said control signal and for varying said delay in proportion to the difference between V MAX and V reflected by said DIF signal.

4,394,890

AUTOMATIC SLACK ADJUSTER

Charles W. Kleinhagen, Jr., Battle Creek, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Aug. 3, 1981, Ser. No. 289,030
Int. Cl.³ F16D 65/56
U.S. Cl. 188—71.9 **28 Claims**



1. An automatic, clearance sensing slack adjuster for maintaining a predetermined running clearance between the selectively engageable and disengageable friction surfaces of a brake comprising:

a housing;

a displaceable brake actuation means displaceable relative to said housing;

a rotatable driving member rotationally received in said housing;

means for rotating said driving member in response to greater than predetermined displacement of said brake actuation means;

a rotatable driven member rotationally received in said housing, said driven member rotatable relative to said driving member;

a rotatable adjustment member rotationally received in said housing, rotation of said adjustment member in a given direction of rotation effective to decrease slack in the brake and in the other direction of rotation to increase slack in the brake;

a normally engaged positive clutch for rotationally coupling said rotatable adjustment member to said driven member;

a force limiting friction clutch for rotationally coupling said driving member to said driven member, the torque transfer capacity of said force limiting friction clutch when rotating said driven member in the direction of rotation which will cause said adjustment member to be rotated in said given direction of rotation being greater than the torque required to rotate said adjustment member when said brake friction surfaces are not in contact but being less than the torque required to rotate said adjustment member when said brake friction surfaces are in contact; and

means accessible from the exterior of said housing for disengaging said normally engaged positive clutch and for

simultaneously rotating said rotatable adjustment member.

4,394,891

DISC BRAKE

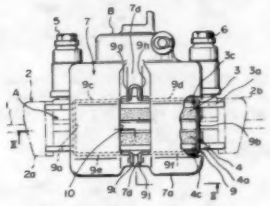
Harumi Oshima, Kawasaki, Japan, assignor to Tokico Ltd., Kawasaki, Japan

Filed Jan. 12, 1981, Ser. No. 224,486

Claims priority, application Japan, Jan. 19, 1980, 55-5018; Mar. 11, 1980, 55-31672[U]

Int. Cl.³ F16D *65/02*

U.S. Cl. 188—73.38 **4 Claims**



1. A disc brake comprising a carrier adapted to be secured to a non-rotatable part of a vehicle and having two circumferentially spaced arm portions which straddle respectively the outer circumference of a rotatable disc, a pair of friction pads positioned on backing plates supported on said arm portions of the carrier to slide in the direction of the axis of the disc, a caliper mounted on the carrier to slide in the direction of the axis of the disc, said caliper including a brake actuator for applying one friction pad against one surface of the disc, said caliper having a limb portion straddling the outer circumference of the disc and engaging with the other friction pad to apply the same against the other surface of the disc, and a pad spring formed of a rod member and being retained on the caliper to bias the friction pads in the radially inward direction with respect to the disc, said backing plates having hook portions formed thereon which engage with the pad spring to retain and suspend the pad backing plates when the caliper has been disassembled from the carrier.

4,394,892

AUTOMATED BRAKING-GAP ADJUSTER SYSTEM FOR MECHANICAL DRUM BRAKE

Mitsutoyo Mizusawa, Ueda; Masayuki Seki, Tateshina, and Kazuo Sunohara, Ueda, all of Japan, assignors to Nisshin Kogyo Kabushiki Kaisha, Ueda, Japan

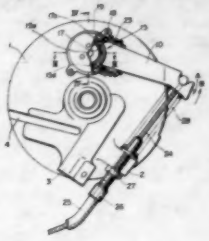
Filed Mar. 23, 1981, Ser. No. 246,185

Claims priority, application Japan, Mar. 31, 1980, 55-41863; Mar. 31, 1980, 55-42952[U]; Mar. 31, 1980, 55-42953[U]; Mar. 31, 1980, 55-42954[U]; Mar. 31, 1980, 55-42955; Jan. 27, 1981, 56-9110[U]

Int. Cl.³ F16D *65/56*

U.S. Cl. 188—196 BA **17 Claims**

1. An automated braking-gap adjuster system for mechanical drum brakes, including a back plate, a pair of brake shoes each having one end pivotally supported on the back plate, a cam member interposed between the other end of the brake shoes and adapted to be rotated by a brake arm, a wedge adjuster having its tapered cam surfaces taking sliding abutment upon the brake shoes, said adjuster being disposed in the cam member such that it is rotatable with the cam member and slidable at right angles to the direction of expansion of the brake shoes when braking, an adjusting rod abutting upon the wedge adjuster and thereadedly connected to the cam member, and an adjusting gear engaged with said adjusting rod and rotated to



cause said adjusting rod to move longitudinally so that said wedge adjuster is urged to thereby expand said brake shoes.

4,394,893

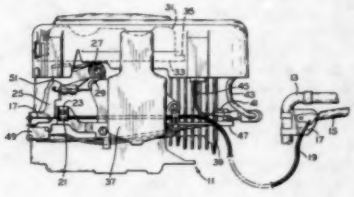
ENGINE SHUT-OFF SYSTEM WITH FLYWHEEL BRAKING

Peter G. Kronich, Sheboygan, and Dan R. Arendt, Belgium, both of Wis., assignors to Tecumseh Products Company, Tecumseh, Mich.

Filed Nov. 7, 1980, Ser. No. 205,010

Int. Cl.³ B60K *41/20*

U.S. Cl. 192—1 **25 Claims**



1. A safety device for an internal combustion engine powered implement having a deadman control normally biased toward a first position and actuable by an implement operator to a second position comprising:

a flywheel coupled to the engine crankshaft for rotation therewith;

a braking member having a friction surface normally biased into engagement with an annular surface of the flywheel, biasing of the deadman control and the biasing of the braking member both being accomplished by one coil spring, the braking member comprising a friction surface supporting lever, a pivot pin fixed relative to the engine pivotably supporting the friction surface supporting lever near one end thereof, the coil spring encircling the pivot pin and having one end fixed relative to the engine and the other end fixed relative to the friction surface supporting lever;

means coupling the braking member to the deadman control for retracting the frictional surface out of engagement with the flywheel annular surface upon movement of the deadman control to the second position;

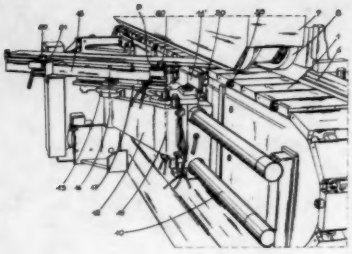
a pair of electrical switches actuated by movement of the braking member, one of the electrical switches being actuated by movement of the braking member toward its engine engaging position to disable the engine ignition system.

4,394,894

MACHINE FOR MACHINING PANELS, PLANKS AND SECTIONS OR SIMILAR, IN PARTICULAR FOR WOOD AND THE DERIVATIVES THEREOF

Giuseppe Gemmani, Rimini, Italy, assignor to SCM Finanziaria S.p.A., Rimini, Italy

Filed Oct. 24, 1980, Ser. No. 200,075
Claims priority, application Italy, Oct. 25, 1979, 3519 A/79
Int. Cl.³ B65G 47/00
U.S. Cl. 198—339 13 Claims



1. Machine for machining workpieces, such as panels, planks and sections or similar, in particular for wood and the derivatives thereof, said machine comprising:

conveying means for conveying workpieces in an infeed direction along a conveying line;

gripping means disposed above and cooperating with said conveying means for gripping workpieces being infed;

a plurality of operating stations fixed in position along said conveying line for performing machining operations on workpieces being infed by said conveying means and said gripping means;

carriage means cooperating with said conveying means for supporting and for infeeding workpieces, said carriage means being positioned at the side of the conveying means and being movable in the infeed direction and in a return direction opposite the infeed direction, said carriage means supporting a support surface for supporting a portion of a workpiece projecting laterally from the conveying means, and having means for adjusting the lateral spacing between said support surface and said conveying means to accommodate different size workpieces; and

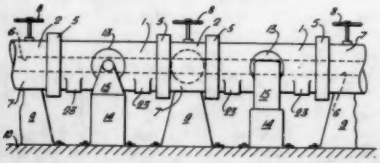
means for coupling said carriage means with said conveying means for conjoint movement therewith.

4,394,895

FACILITIES FOR THE EXAMINATION OF RADIOACTIVE BODIES

Maurice E. Ginniff, Seascale, and Eric K. Richardson, Sale, both of England, assignors to United Kingdom Atomic Energy Authority, London, England

Filed Jan. 12, 1981, Ser. No. 224,116
Claims priority, application United Kingdom, Jan. 23, 1980, 8002193
Int. Cl.³ B65G 51/26, 54/02
U.S. Cl. 198—339 3 Claims



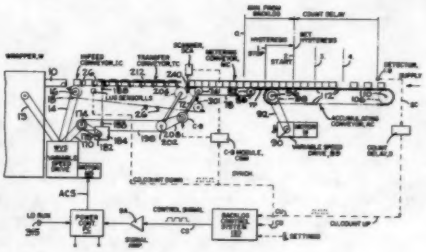
1. Facility for the examination of radioactive bodies comprising a movable carriage having means for supporting and transporting at least one radioactive body, a relatively thick radioactive shield having the property of shielding substantially all radioactive emissions, said shield surrounding and defining a shielded passage forming a path of travel for the carriage and having a transverse dimension to substantially fit about a corresponding dimension of the carriage, a plurality of examination stations spaced along the path of travel with said stations being confined within the dimensions of the shielded passage, examination equipment for said stations located outside the said shield at each examination station and in communication with its respective examination station within the shielded passage and means for moving the carriage along the shielded passage.

4,394,896

BACKLOG CONTROL SYSTEM FOR PROCESSING MACHINE

Jerry L. McComas, Sunnyvale, Calif., and Donald C. Crawford, Green Bay, Wis., assignors to FMC Corporation, Chicago, Ill.

Filed Jul. 29, 1980, Ser. No. 168,834
Int. Cl.³ B65G 43/00
U.S. Cl. 198—341 9 Claims



1. The method of controlling a backlog of articles supplied to a variable speed article processing machine, said method comprising the steps of serially removing unprocessed articles from the backlog and introducing them to the machine at a rate that is synchronized with machine speed, effecting a count corresponding to each article being removed from the backlog, randomly supplying unprocessed articles to a conveyor for addition to the backlog, counting each article being thus supplied at a point upstream of a selected maximum backlog position, delaying the transmission of each article supply count by a length of time equal to that required for the conveyor to transport an article from said upstream point to said selected backlog position for providing a delayed count, taking the difference between said delayed counts and said backlog removal counts and controlling machine speed on the basis of said count difference.

4,394,897

PALLET REGISTRY MECHANISM AND TRANSFER LIFT SYSTEM

John H. Brems, 32867 White Oaks Trail, Birmingham, Mich. 48010

Filed Nov. 14, 1980, Ser. No. 206,701
Int. Cl.³ B65G 47/00
U.S. Cl. 198—345 4 Claims

1. In a multiple station transfer machine in which workpieces are located and supported in pallets, and in which said pallets are moved in sequence through said machine, utilizing, in part, vertically moving transfer means, interrelated registry mechanisms for locating and clamping said pallets, each of which comprises:

(a) a registry frame,

(b) one or more locating pin means slidably mounted in said

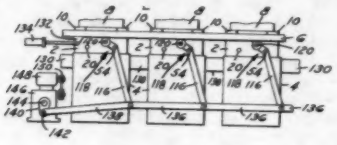
frame to engage corresponding locating holes in said pallet,

(c) clamping means for said pallet movably mounted in said frame,

(d) energy storage means mounted in said frame,

(e) mechanical means interconnecting said energy storage means with said locating pin means and with said clamping means to sequentially engage said locating pins in said holes in said pallet and clamp said pallet to said registry frame, and that improvement which comprises:

(a) external actuating means for said registry interconnected with and operating said mechanical means to retract said clamping means from said pallet and thereafter to disengage said locating pin means from said holes, said external actuating means comprising a shaft rotatable about an axis



extending transversely to the line of transfer of said transfer machine and having a short actuator arm extending therefrom, and

(b) lift means for said transfer means substantially contiguous with said external actuating means and operatively associated with said external actuating means comprising a lever having a fulcrum portion rotatable on said shaft, said lever having a long arm on one side of said fulcrum to be actuated by a power system, a first short arm on the other side of said fulcrum to contact and actuate said actuator arm to rotate said shaft, and a second portion eccentric to said shaft to provide a lift member for said transfer means, said lift means being sequentially interrelated with said clamping means and said locating pin means to raise said transfer means after said clamping means are retracted and said locating pin means are disengaged.

4,394,898

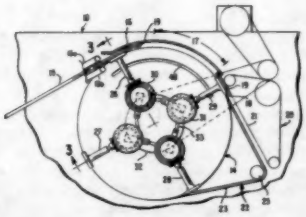
METHOD AND APPARATUS FOR PROVIDING BALANCED STACKS OF DIAPERS

James F. Campbell, Green Bay, Wis., assignor to Paper Converting Machine Company, Green Bay, Wis.

Filed Apr. 23, 1981, Ser. No. 256,915

Int. Cl.³ B65G *47/24*; B65H *289/24*

U.S. Cl. 198—374 **14 Claims**



1. A method of arranging diapers for balanced stacking comprising advancing a series of diapers all in a particular orientation along a predetermined path toward a rotating drum, vacuum gripping each diaper in sequence for travel on said drum, rotating alternate diapers in said series 90 degrees to the right about an axis extending radially of said drum and rotating the remaining diapers in said series 90 degrees to the left also about an axis extending radially of said drum, and removing said series of diapers from said drum before completion of a drum rotation to provide a stream of diapers for stacking wherein each diaper is oriented 180 degrees relative to the next adjacent diaper.

4. Apparatus for orienting diapers and the like comprising a frame, a drum mounted on said frame, means on said frame for rotating said drum, means operably associated with said frame for delivering a series of diapers to the surface of said drum for travel thereon, means for removing said series after traveling on said drum, said drum being equipped with an even-numbered plurality of turning devices for vacuum engagement of said diapers, and said drum being equipped with means for rotating alternate of said turning devices 90 degrees in one direction and the remaining turning devices 90 degrees in the opposite direction whereby adjacent diapers on said removing means are oriented 180 degrees relative to each other to facilitate balanced stacking.

4,394,899

ARTICLE GROUPING APPARATUS

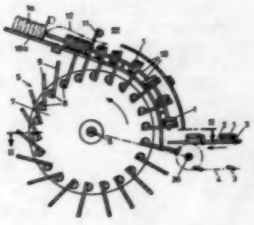
Rene Fluck, Schleitheim, Switzerland, assignor to SIG - Schweizerische Industrie-Gesellschaft, Neuhausen am Rheinfall, Switzerland

Filed Dec. 5, 1980, Ser. No. 213,724

Claims priority, application Switzerland, Dec. 13, 1979, 11066/79

Int. Cl.³ B65G *29/00*

U.S. Cl. 198—408 **8 Claims**



1. In an apparatus for forming groups of upright-oriented, stacked articles, including a supply conveyor for advancing the articles in a flat-lying, spaced relationship; the improvement comprising

(a) a conveyor wheel supported for rotation about a wheel axis and situated adjacent said supply conveyor;

(b) means for rotating said conveyor wheel;

(c) a plurality of transfer pushers pivotally secured to said conveyor wheel in a circular array about said wheel axis; said transfer pushers extending, from their pivotal attachment, in a direction oriented away from said wheel axis; said transfer pushers being arranged for consecutively lifting off flat-lying articles from said supply conveyor and for conveying the articles in a curvilinear path from an upstream end to a downstream end thereof;

(d) guiding means for imparting a pivotal motion to said transfer pushers during their travel along said curvilinear paht; said guiding means including

(1) a plurality of pivot shafts rotatably mounted in said conveyor wheel in a circular array about said wheel axis and in an orientation parallel to said wheel axis; said transfer pushers being mounted to a respective said pivot shaft;

(2) a crank arm attached to each pivot shaft;

(3) follower means carried on each crank arm; and

(4) a control disc supported adjacent said conveyor wheel; said control disc including a closed cam track into which project said follower means of said crank arms; the course of said closed cam track being such that upon rotation of said conveyor wheel the ends of said transfer pushers remote from their pivotal attachment are closer

to one another in the zone of said downstream end than in the zone of said upstream end of said curvilinear path;

(e) a guide track having a first, circularly acruate portion coinciding with said curvilinear path; said first portion having a clearance through which said transfer pushers project for advancing articles by sliding the articles in an upright position along said first portion of said guide track; said guide track having a second portion adjoining said first portion and extending tangentially thereto in an upwardly sloping orientation; said second portion of said guide track constituting a gathering channel adjoining the downstream end of said curvilinear path for receiving articles from said transfer pushers in an upright orientation;

(f) a gathering mechanism including a gathering pusher and moving means for displacing said gathering pusher in a closed orbital path for periodically engaging and advancing a group of upright-oriented, face-to-face arranged articles along said gathering channel from said downstream end; and

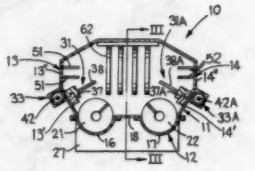
(g) synchronizing means connected to said transfer pushers and said gathering pusher for mechanically coupling selected transfer pushers with said gathering pusher by interfitting engagement of said synchronizing means for synchronizing the motion of said gathering pusher with each said transfer pusher.

4,394,900

CENTRAL SYSTEM ELEVATOR

Roger T. Becker; John W. Hathaway, and J. Michael Harbour, all of Kalamazoo, Mich., assignors to Kalamazoo Conveyor Company, Kalamazoo, Mich.

Filed Jan. 12, 1981, Ser. No. 224,356
Int. Cl.³ B65G *37/00*
U.S. Cl. 198—614 **19 Claims**



1. An elongated inclined conveyor apparatus for advancing and elevating solid materials, such as a mixture of large and small material pieces, for example fine and large metal chips and turnings, in a lengthwise direction along the conveyor apparatus, comprising:

elongated trough means disposed so as to incline upwardly relative to the horizontal, said trough means having a lower end for receiving therein said materials and an upper end for discharge of said materials, said trough means having wall means defining a generally channel-shaped trough having a bottom wall and a pair of generally upwardly projecting side walls, said bottom wall having means defining a substantially semicylindrical recess which opens upwardly and extends lengthwise along the trough;

first conveyor means movably disposed within and extending lengthwise of said trough for moving small materials upwardly along the trough, said first conveyor means including elongated helical flight means disposed in said recess means and being rotatable about the lengthwise axis;

first drive means operatively connected to said helical flight means for effecting rotation thereof in such direction as to cause the materials engaged by said flight means to be moved upwardly along said trough toward the upper end thereof;

second conveyor means movably disposed within and extending lengthwise along said trough for moving larger materials upwardly along said trough, said second conveyor means including first and second reciprocating conveyors extending lengthwise of said trough in parallel relationship with one another and supported for reciprocating lengthwise movement therein;

each of said first and second reciprocating conveyors including support means fixed to said wall means and defining an elongated path which extends in the lengthwise direction of said trough, an elongated support extending lengthwise of said trough and being guidably supported on said support means for linear reciprocal movement, and a plurality of material engaging elements mounted on said support at longitudinally spaced locations therealong, said material engaging elements having a configuration for engaging and advancing the materials upwardly along the trough during the forward stroke of the respective conveyor while permitting the material engaging elements to slidably move past the materials during the rearward stroke;

said material engaging elements as associated with each of said first and second reciprocating conveyors projecting generally into the interior of said trough, and said material engaging elements as associated with the respective first and second reiprocating conveyors being spaced laterally a substantial distance apart to permit the positioning of said materials therebetween; and

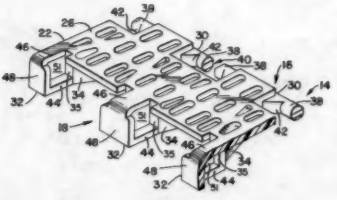
second drive means drivingly connected to said first and second reciprocating conveyors for effecting linear reciprocation thereof in generally parallel relationship to the lengthwise direction of said trough.

4,394,901

MODULAR PLASTIC CONVEYOR BELT

Gerald C. Roinestad, Winchester, Va., assignor to Ashworth Bros., Inc., Fall River, Mass.

Filed Dec. 16, 1980, Ser. No. 217,205
Int. Cl.³ B65G *15/30*
U.S. Cl. 198—850 **18 Claims**



1. A modular plastic conveyor belt for conveying articles in a conveying direction comprising a plurality of plastic belt modules releasably connected to one another to form an extended belt, each module being formed of a single integral piece of plastic material bendable in a direction away from a plane in the conveying direction and having an upper surface, a lower surface, a first and a second end extending transversely of the conveying direction of the belt and a pair of opposed sides, a plurality of male members disposed along substantially the entire first end, and a plurality of female members disposed along substantially the entire second end for receiving and connecting to said male members of an adjacent connected module, each female member being shaped and dimensioned to delimit a connecting space within which the male members of an adjacent connected module can be shifted both laterally and longitudinally, means formed integral with said modules for laterally aligning adjacent modules when a tractive load is placed on the belt, each of said female members completely surrounding without a gap at least a portion of a respective male member in the aligned position and each of said male members along one of their sides being removed from the

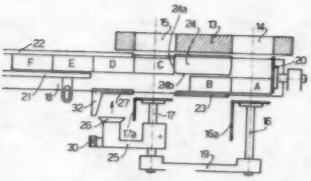
surrounding relationship of said female members in a position wherein adjacent modules are shifted laterally whereby adjacent modules can be uncoupled by bending one of the modules in a direction away from a plane in the conveying direction to uncouple the laterally shifted male members from said female members.

4,394,902

OFFSET DEVICE FOR ARRANGING ALONG TWO PARALLEL LINES, ARTICLES WHICH ARRIVE FROM A SINGLE LINE

Guido Mazzoni, Busto Arsizio, Italy, assignor to Costruzioni Meccaniche G. Mazzoni S.p.A., Busto Arsizio, Italy

Filed May 26, 1981, Ser. No. 267,295
Claims priority, application Italy, Jun. 6, 1980, 22626 A/80
Int. Cl.³ B65G *47/26*
U.S. Cl. 198—436 **5 Claims**



1. An offset device for arranging along two parallel lines articles which arrive from a single line, wherein a row of articles is arranged one after the other on a movable conveyor belt or the like so as to make up a continuous row subjected to a longitudinal guide device, a stop member for stopping the leading article in front of a cavity into which said article is to be introduced, pushing means for introducing said leading article into said cavity of the molding box, a drawing member mounted for reciprocating motion at right angles to said first row of articles to displace preselected articles from said first row to a second row parallel to the first row, a second guide device, a second stop member for the leading article of said second row and a second pushing means for introducing said leading article of said second row into a second cavity of the molding box capable of receiving the same.

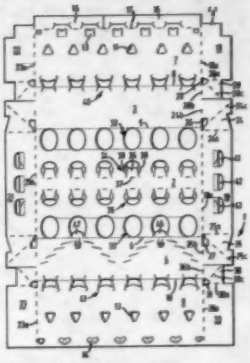
4,394,903

WRAP-AROUND TYPE PACKAGE FOR BOTTLES

Martinus C. M. Bakx, Roosendaal, Netherlands, assignor to The Mead Corporation, Dayton, Ohio

Continuation of Ser. No. 208,205, Nov. 19, 1980, abandoned. This application Nov. 10, 1982, Ser. No. 440,786
Claims priority, application United Kingdom, Nov. 15, 1979, 7939621
Int. Cl.³ B65D *75/08*
U.S. Cl. 206—427 **5 Claims**

1. A carton of the wrap-around type for packaging a group of bottles arranged in a plurality of adjacent rows, which carton comprises top and bottom walls interconnected by spaced side walls forming a tubular strcture with top and bottom walls substantially parallel to one another, top flaps joined to the ends of said top wall and folded downwardly to close at least partially the ends of said carton, gusset panels foldably joined to said top flaps at each end thereof and to adjacent side walls, each of said gusset panels including a diagonal fold line defining foldable gusset panel portions, characterized in that said fold lines by which said gusset panels are joined to the ends of said top flap are substantially parallel to but offset inwardly from the fold lines between said side walls and said top wall and in that said gusset panel portions are folded inwardly into face-to-face contacting relationship with each other whereby the carton is tightened about its top



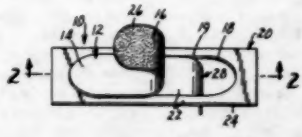
ends as the top flaps are folded downwardly and said gusset panel portions are folded about said diagonal fold lines.

4,394,904

PERIPHERALLY SUPPORTED PACKAGE FOR ADHESIVE-SURFACED ARTICLES

Franklin C. Larimore, Shoreview, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 224,446, Jan. 12, 1981, abandoned, which is a continuation-in-part of Ser. No. 203,566, Nov. 5, 1980, abandoned. This application Aug. 11, 1981, Ser. No. 292,008
Int. Cl.³ B65D *85/70*
U.S. Cl. 206—447 **18 Claims**

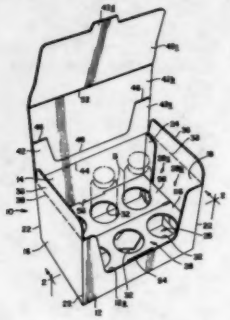


1. A package comprising:
(a) an adhesive-surfaced, delicate sheet-like article;
(b) a release sheet laminated to the adhesive surface of said article and cut to form
(1) a peripheral release carrier that is releasably adhered to peripheral areas of said adhesive surface and that has a central aperture exposing a major portion of the adhesive surface of said article; and
(2) a release cover cut out of said release sheet and having the exact dimensions of said aperture in said peripheral release carrier, releasably adhered over the portion of said adhesive surface exposed by said aperture;
the ratio of the length of a straight line joining any two points on the perimeter of said article and passing through the center of said article, to the summation of the segments of that line overlapped by said peripheral release carrier, being at least about 5 to 1.

4,394,905
AUTO PLATFORM CARTON

Robert A. Hackenberg, East Lyme, Conn., assignor to Robertson Paper Box Co., Inc., Montville, Conn.

Filed Nov. 12, 1980, Ser. No. 206,063
Int. Cl.³ B65D 73/00, 5/36
U.S. Cl. 206—486 14 Claims



1. A folding carton for containing fragile articles comprising

A. four wall panels hinged together for collapsing into a flat structure and opening up to form a generally rectangular tube,

B. a lock bottom for the carton, said bottom comprising

(1) a pair of parallel, generally rectangular bottom panels hinged to one pair of opposite carton wall panels and extending between the other pair of opposite carton wall panels, and

(2) a pair of gusset panels hinged to said other pair of wall panels and to the rectangular bottom panels, said bottom panels being foldable up inside the collapsed structure and opening out to occupy a substantially common plane perpendicular to the wall panels when the carton is set up, and

C. a platform foldable up inside the collapsed structure and spaced above the carton bottom panels when the carton is set up, said platform comprising a pair of similar mating platform sections, each section including

(1) a generally rectangular platform panel hinged at one edge to one panel in said first pair of wall panels, and

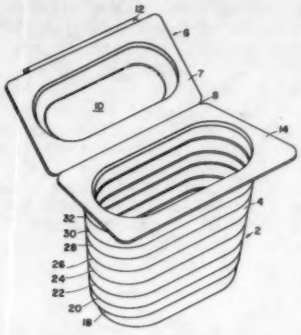
(2) a support panel hinged to the opposite edge of said platform panel and also to the underlying rectangular bottom panel so that, when the carton is set up, the platform panels swing down into a substantially common plane above the plane of the bottom panels with the support panels abutting one another to form a medial reinforcing rib between the platform and the carton bottom all along the platform which inhibits platform sag and rigidifies the carton as a whole.

4,394,906
FOOD CONTAINER/HOLDER

John C. Hollenbeck, 11 Mount Darwin Ct., San Rafael, Calif. 94903

Filed Jun. 23, 1981, Ser. No. 276,666
Int. Cl.³ B65D 1/26, 17/28, 83/00
U.S. Cl. 206—525 5 Claims

1. A food container/holder comprising a unitary foamed plastic body having a bottom container portion for said food with a plurality of corrugation bands ascending from a closed bottom to an opening, said opening defined in a first plane surface, a top hinged to an edge of said first plane surface, said top having a second plane surface, with a recess therein and a catch on an edge of said second plane surface for securing said first plane surface to said second plane surface, said bottom portion having a length sufficient to contain substantially all of said food and said foamed plastic body and said corrugation

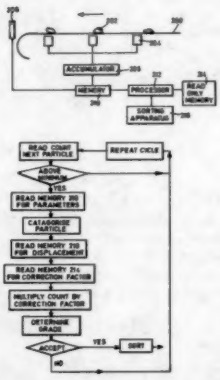


bands facilitating advancement of said food through said opening and maintaining said advancement.

4,394,907
DISPLACEMENT ERROR CORRECTION IN SORTING SYSTEMS

Rolf C. Bohme, Kyalami, and Max M. Lazerson, Northcliff, both of South Africa, assignors to General Mining Union Corporation, Limited, Johannesburg, South Africa

Filed Dec. 3, 1980, Ser. No. 212,515
Claims priority, application South Africa, Dec. 4, 1979, 79/6566; Jul. 15, 1980, 80/4248
Int. Cl.³ B07C 5/346
U.S. Cl. 209—556 8 Claims



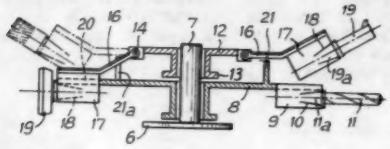
6. A method of sorting particles which includes the steps of causing the particles to move in line spaced from one another sequentially past a plurality of in-line detectors, the detectors being responsive to the presence of a desired property in the particles and each producing, for each particle, an output signal which is dependent on the degree to which the property is present in the particle, and, for each particle, accumulating the output signals of the detectors, obtaining a measure of the displacement of the particle from the centre line of the detectors, and applying to the accumulation of the output signals a correction factor which compensates for the displacement of the particle from the centre line.

4,394,908

TOOL MAGAZINE FOR AUTOMATIC TOOL-CHANGING DEVICE

Pierre Pinchemaille, Albert, France, assignor to Line S.A., Albert, France

Filed Feb. 26, 1981, Ser. No. 238,603
Claims priority, application France, Mar. 26, 1980, 80 06758
Int. Cl.³ B23Q 3/157, 13/00
U.S. Cl. 211—1.5 8 Claims



1. A tool magazine for an automatic tool-changing device, comprising:

(a) a first substantially circular disc mounted for rotation about a magazine axis, said first disc having on the periphery thereof a plurality of first tool-receiving housings, the axes of said first housings being arranged substantially on radii of said first disc;

(b) a second substantially circular disc mounted for rotation about said magazine axis;

(c) a plurality of second tool-receiving housings pivotally mounted on said second disc, the axes of said second housings being arranged substantially on radii of said second disc, said second housings further being pivotable about respective axes substantially perpendicular to said second radii; and

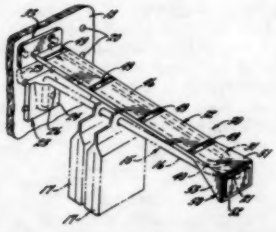
(d) an opening on the periphery of said first disc wherein a first housing would normally be positioned for selectively receiving a second housing therein.

4,394,909

GUARD FOR A HANGER ASSEMBLY

Stanley J. Valiulis, and Richard D. Barnes, both of Rockford, Ill., assignors to Southern Imperial, Inc., Tupelo, Miss.

Filed Oct. 16, 1980, Ser. No. 197,576
Int. Cl.³ A47F 5/00
U.S. Cl. 211—59.1 9 Claims



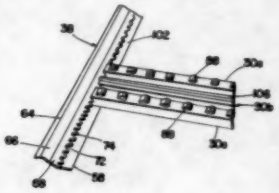
1. A guard for a hanger assembly adapted to be attached to an upright perforated panel and having an outwardly extending hanger arm, said guard comprising an elongated first section having inner and outer ends, means for attaching the inner end of said first section to said panel in overlying relation with said hanger arm, said guard further comprising an elongated second section having inner and outer ends, said second section being telescoped with said first section and being selectively slidable inwardly and outwardly relative thereto to enable adjustment of the effective length of said guard, a series of first detents spaced along said first section, a second detent formed on said second section, said second detent successively engaging said first detents when said second section is slid inwardly and outwardly thereby to hold said second section releasably in selected adjusted positions along said first section, and said guard further comprising a shield on the outer end of said second section and located in front of the outer end of said hanger arm.

4,394,910

SHELF FOR ORDER PICKING SYSTEMS

Daniel A. Miller, Lebanon, Ohio, assignor to Nestier Corporation, Columbus, Ohio

Filed Sep. 22, 1980, Ser. No. 189,195
Int. Cl.³ A47F 5/00
U.S. Cl. 211—490 22 Claims



1. A shelf for an order picking system comprising:

a generally rectangular frame defined by opposite side frame members and front and rear rails, said rails having upwardly facing bottom support surfaces inside of said frame, each of said rails having a plurality of uniformly spaced notches above said support surfaces opening inwardly of said frame, track members extending across said frame between said rails and having a width substantially less than the width of said frame between said side frame members, said track members having bottom end portions supported on said support surfaces and having end edge portions received in certain of said notches, and said track members being selectively adjustable across said frame in a direction between said side frame members by lifting same upwardly of said frame for transverse shifting and then lowering to a new position; further including, said bottom support surfaces being on bottom flanges having bottom flange edges inside said frame, said notches being defined on an upper rail flange spaced above said bottom flange, said upper rail flange having spaced-apart teeth between which said notches are defined, and said teeth having teeth ends spaced in a direction outwardly of said frame from said bottom flange edges.

4,394,911

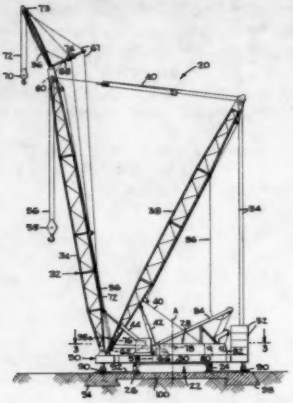
HEAVY DUTY CRANE

Leroy L. Wittman, Marion, and Lyle B. Jensen, Cedar Rapids, both of Iowa, assignors to FMC Corporation, Chicago, Ill.

Filed Apr. 8, 1980, Ser. No. 138,461
Int. Cl.³ B66C 23/72
U.S. Cl. 212—189 55 Claims

1. A mobile heavy duty self propelled crane for use on a foundation at a work site having a generally horizontal load supporting surface substantially at ground level, said crane including a lower works having ground engaging transport means, an upper works including an auxiliary frame means and mobile components operatively connected thereto and mounted on said lower works for rotation about a vertical axis, a large diameter steel ring having a lower surface and an upper surface, rotatable means for supporting the auxiliary frame on said ring for rotation relative thereto; the improvement which comprises means mounting said auxiliary frame means and certain components operatively connected thereto for substantial vertical movement, jack means operatively connected to said auxiliary frame means for vertically moving said frame

means and said vertically movable mobile crane components operatively connected thereto between a lowered working position wherein the auxiliary frame means is supported by said rotatable means on the upper surface of said ring while the lower surface of the ring is supported on the load supporting



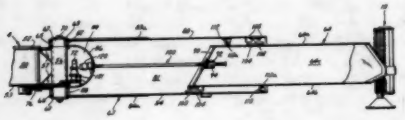
surface of said foundation, and a raised transport position wherein said mobile ground engaging means supports all other vertically movable components of the crane a sufficient distance above the lower surface of said ground engaging transport means to provide adequate road clearance.

4,394,912

MOBILE CRANE HAVING TELESCOPING OUTRIGGERS AND POWER OPERATED SCREW MEANS FOR SAME

Stephen R. Epps, and Narahari Gattu, both of Cedar Rapids, Iowa, assignors to Harnischfeger Corporation, W. Milwaukee, Wis.

Filed Nov. 7, 1980, Ser. No. 203,942
Int. Cl.³ B66C 23/78, 23/30
U.S. Cl. 212—189 **9 Claims**



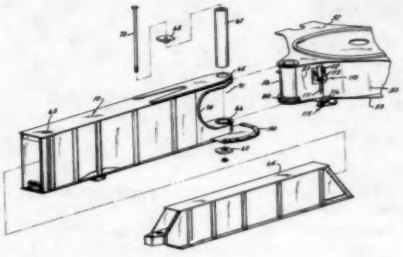
1. A mobile crane comprising, an elongated main frame, ground engaging means on said frame for supporting said frame for movement over the ground, a superstructure rotatably mounted on said frame and having an elevational boom pivoted thereto; and a pair of outriggers each having an inner end pivotally secured to said main frame at a location intermediate the length of said frame, said inner end of said outriggers is of bifurcated construction and defines an outwardly facing recessed pocket, vertically positionable ground engageable means carried by the outer end of said outriggers, one outrigger being secured to said frame at each side thereof and about a vertical axis for swinging between a transport position alongside said elongated main frame and a boom operative position extending transversely outwardly of said main frame, said outriggers comprising an elongated box and an inner beam telescopingly slideable within said box for contraction within said box and extending from said box, power operated extension means mounted between said box and beam of each of said outriggers for telescopingly sliding said beam relative to said box, said extension means comprising reversible motor means mounted in said recessed pocket of said box and having an elongated threaded shaft extending from and rotatable in either direction by said motor means, and a non-rotatable threaded member carried by said beam and threadably engageable by said threaded shaft, whereby rotation of said shaft causes telescoping movement of said beam with said box.

4,394,913

CRANE HAVING POWER OPERATED OUTRIGGERS AND LOCK MEANS THEREFOR

John M. Lanning, Solon, and Stephan R. Epps, Cedar Rapids, both of Iowa, assignors to Harnischfeger Corporation, West Milwaukee, Wis.

Filed Nov. 7, 1980, Ser. No. 203,944
Int. Cl.³ B66C 23/78
U.S. Cl. 212—189 **3 Claims**



1. A mobile crane comprising, an elongated main frame, ground engaging means on said frame for supporting said frame for movement over the ground, a superstructure rotatably mounted on said frame and having an elevational boom pivoted thereto; and a pair of outriggers each having an inner end pivotally secured to said main frame at a location intermediate the length of said frame, one outrigger being secured to said frame at each side thereof and about a vertical axis for swinging between a transport position alongside said elongated main frame and a boom operative position extending transversely outwardly of said main frame, said inner end of said outriggers being of bifurcated construction formed by a generally semi-circular plane welded transversely across said inner end and defining an outwardly facing recessed pocket, power operated means mounted on said outriggers and in said pocket for swinging said outriggers relative to said main frame, said power operated means comprising a hydraulic motor and a gear reducer driven thereby, said motor and reducer being disposed in a vertical direction, and a pinion gear attached to the lower end of said reducer and driven by said reducer, and a gear segment secured to said main frame adjacent a lower side of said main frame, said segment being in mesh with said pinion gear whereby rotation of said pinion gear causes swinging of said outrigger.

4,394,914

TELESCOPIC CRANES

Albert Privat, St. Chamond, France, assignor to Creusot-Loire, Paris, France

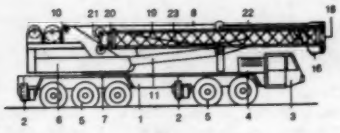
Continuation of Ser. No. 956,597, Oct. 30, 1978, abandoned.
This application Dec. 19, 1980, Ser. No. 218,175
Claims priority, application France, Nov. 21, 1977, 77 34850
Int. Cl.³ B66C 23/00
U.S. Cl. 212—203 **3 Claims**

1. A telescopic crane comprising:

(a) a telescopic shaft comprising a plurality of telescopic elements;

(b) a boom of variable length comprising an outer section and at least one slidable inner section;

(c) means connecting said boom to said shaft for rotation of said boom relative to said shaft;
(d) means for varying the length of said boom and comprising a double-acting jack;
(e) a mast;
(f) means connecting one end of said mast to said boom for rotation of said mast relative to said boom;
(g) means connecting the body of said jack to one of said telescopic elements of said shaft for rotation of said jack relative to said one telescopic element;



(h) the outermost of said telescopic elements of said shaft comprising a mortise into which said jack fits in retracted position;
(i) means connecting the rod of said jack to the other end of said mast for rotation of said jack relative to said mast; and
(j) tie means connecting said other end of said mast to a point on said boom located outwardly of said means connecting said boom to said mast.

4,394,915

HOT MELT ADHESIVE COMPOSITIONS AND BOTTLE ASSEMBLIES USING SAID COMPOSITIONS

Jeffrey Nelson, Milwaukee, Wis., assignor to Findley Adhesives Inc., Elm Grove, Wis.

Filed Apr. 12, 1982, Ser. No. 367,738
Int. Cl.³ B65D *23/00*; C08L *53/00*
U.S. Cl. 215—12 R **10 Claims**

1. A hot melt adhesive which comprises a blend of: (1) a block copolymer selected from the class consisting of: (a) an A-B-A block copolymer where A is a monovinyl aromatic hydrocarbon and B is either a conjugated diene or a rubbery mono-olefin and (b) a teleblock copolymer comprising molecules having at least three branches radially branching out from a central hub, each said branch having polystyrene terminal blocks and a butadiene segment in the center; (2) an ethylene/vinyl acetate copolymer; (3) a tackifying resin which serves to extend the adhesive properties of the system; (4) a wax or oil diluent.

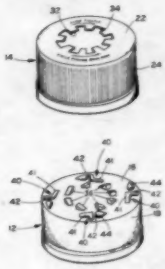
4,394,916

CHILD-RESISTANT CLOSURE ASSEMBLY

Ned J. Smalley, Perrysburg, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Mar. 29, 1982, Ser. No. 362,584
Int. Cl.³ B65D *55/02*
U.S. Cl. 215—220 **4 Claims**

4. A safety closure assembly for a threaded container neck comprising:
an inner cap member incuding a top panel and a depending annular skirt, said inner cap skirt having threads formed thereon for engaging the threaded container neck, said inner cap panel having at least one upstanding, non-concentric driving lug formed on the upper surface thereof;
an outer cap member including a top panel and a depending annular skirt, said outer cap member loosely encompassing said inner cap member and permitting relative rotational movement therebetween, and means for retaining said inner cap member within said outer cap member but permitting limited relative axial movements of said inner and outer cap members;
a plurality of peripherally spaced, upstanding ratchet lugs on said inner cap panel;
a plurality of depending integral leaf spring elements on the bottom surface of said outer cap member normally biasing said inner and outer cap members to a second relative axial position in which said non-concentric aperture and driving lug are out of engagement, said leaf springs being arranged to drivingly engage said ratchet lugs when said outer cap member is rotated in a closure tightening direction and to cam past said ratchet lugs when said outer cap member is rotated in a closure removal direction; and
said non-concentric aperture being angularly misaligned with said upstanding drive lug when said leaf spring members are drivingly engaging said ratchet lugs.

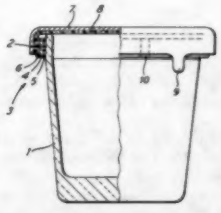


4,394,917

SEALED CLOSURE-CONTAINER PACKAGE

Christian Looser, Lutzenberg, Switzerland, assignor to Alcan International Limited, Montreal, Canada

Filed Jan. 29, 1982, Ser. No. 344,005
Claims priority, application Switzerland, Feb. 3, 1981, 721/81
Int. Cl.³ B65D *81/36*
U.S. Cl. 215—232 **7 Claims**



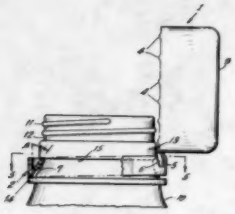
1. Sealed package for use or reuse as a drinking vessel comprising a container having an essentially cylindrical surface adjacent the container mouth, a ring, formed of a length of tape-like material, adhered to said cylindrical surface by means of a layer of pressure sensitive adhesive carried by said tape-like material, said pressure sensitive adhesive being selected to be peelable from said container surface without leaving objectionable residues thereon, and a foil cover secured to said ring by means of a heat-sealable material.

4,394,918

SCREW CAP WITH TAMPER-PROOF HOLD RING

Jean Grussen, Breval, France, assignor to Charles A. Breskin Assoc. Inc., White Plains, N.Y.

Filed Jul. 1, 1981, Ser. No. 279,364
Claims priority, application France, Feb. 11, 1981, 81 02723
Int. Cl.³ B65D *41/34*
U.S. Cl. 215—243 18 Claims



1. A screw cap for covering the opening in the neck of a container, comprising:

the cap being a single molded member comprised of a semi-rigid material, having the ability to flex elastically;

the cap comprising:

a cap body, including an end for covering the opening in the container neck and including a lower edge away from the end;

a closed, annular, hold ring for surrounding the container below the neck thereof; the ring being connected to the cap body at the lower edge of the cap body by a plurality of attachment tabs which are sized and shaped for being breakable upon being stressed more than a predetermined amount;

a plurality of lock-lugs attached to the ring and protruding inwardly from the ring and also toward the end of the cap body, and the lock-lugs terminating at respective free ends, which free ends are adapted for engaging an element of the container to prevent raising of the lock-lugs past that container element; the lock-lugs protruding in such a manner that a circle passing through the free ends of the lock-lugs has a diameter less than the diameter of the container element;

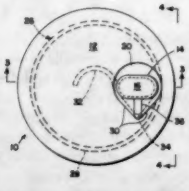
a flange for providing a generally non-breakable connection between the cap body and the ring, said flange being flexible for permitting the cap body to pivot off the hold ring with the flange serving as the pivot hinge, said flange being located between two tabs of said plurality of attachment tabs.

4,394,919

CLOSURE FOR CONTAINER

Raymond D. von Alven, San Rafael, and Lee E. McGill, Orinda, both of Calif., assignors to Cutter Laboratories, Inc., Berkeley, Calif.

Filed Jul. 23, 1981, Ser. No. 286,117
Int. Cl.³ B65D *41/32*
U.S. Cl. 215—253 16 Claims



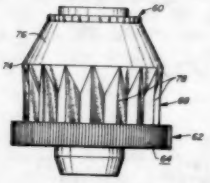
1. A closure for a container for sealing the neck of the container comprising a generally flat cap hermetically sealed to the neck, a score line in a surface thereof, a tear-initiating means associated with the score line which comprises a hollow tubular member extending upwardly from the top surface of the cap and adapted for initiating a rupture of the score line at a stress-concentrating locus on the score line, said tubular member having a generally flat closed outer end and an open inner end which coincides with an opening in the surface of the cap, and said tubular member having a generally oval cross-section, said oval cross-section defining a major axis and a minor axis.

4,394,920

SELF LOCKING CONTAINER CLOSURE

Ernst R. Jamer, 625 Shelter Creek La. #353, San Bruno, Calif. 94066

Continuation-in-part of Ser. No. 182,552, Aug. 29, 1980, Pat. No. 4,331,248, and a continuation-in-part of Ser. No. 256,350, Apr. 21, 1981, abandoned. This application Oct. 23, 1981, Ser. No. 314,282
The portion of the term of this patent subsequent to May 25, 1999, has been disclaimed.
Int. Cl.³ B65D *41/48*
U.S. Cl. 215—253 20 Claims



1. A container closure for use on a container of the type having a hollow neck, a rim at the end of the neck, the rim circumscribing the mouth of the container, and a ring extending around the neck, the closure comprising:

a top portion adapted to seat against said rim to seal said container;

a radially expandable skirt depending from said top portion to surround a portion of said neck, said skirt having an upper edge attached to said top portion and a lower edge opposite said top edge, said lower edge extending past said ring;

said skirt having a plurality of inwardly directed shoulder portions, said shoulder portions having means for rotationally biasing said shoulder portions away from the ring as said shoulder portions pass the ring on the container, said shoulder portions also including a ring engagement surface adapted for engagement under said ring to secure said closure on said container; and

a retaining ring frangibly attached to said skirt below said ring engagement surface to restrict the radial movement of said shoulder portions.

4,394,921

GLASSWARE STOPPER WITH VENTING VALVE

Robert J. Miskinis, 9758 Airport Vista Rd., Santee, Calif. 92071

Filed Sep. 24, 1981, Ser. No. 305,166
Int. Cl.³ B65D *39/16*
U.S. Cl. 215—296 1 Claim

1. A vent stopper for a glassware vessel having a standard taper opening with a tapered surface comprising:

a reusable stopper body (made of a polymer resin) having a diameter less than the diameter of the vessel opening and having a standard taper outer surface to sealably conform to the tapered surface of the vessel, an inner end for extending into the neck of the vessel, and an outer shank end, said shank end having a diameter no greater than the

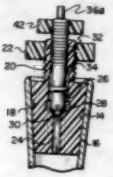
diameter of the stopper body to enable the stopper body to be totally and instantly sealed within the vessel opening below the rim of the vessel opening anywhere along the entire standard taper surface,

a first bore extending from said inner end to proximate the center of said stopper body,

a second bore extending from said outer end and communicating with said first bore,

a valve seat at the intersection of said first and second bores,

a valve stem having a passage therein mounted within said second bore and selectively movable into and out of engagement with said seat for selectively blocking and opening communication between said bore and said passage,



an extractor assembly for extracting said stopper from the vessel opening by breaking the seal between said standard taper surfaces, said shank end of the stopper being threaded, an extractor nut threadedly mounted on the threaded shank end and having a diameter greater than the diameter of the vessel opening so as to engage the rim of the vessel opening and upon turning exert an axial force on the stopper body to break the seal between said surfaces and allow the stopper to be lifted freely out of the vessel opening.

4,394,922

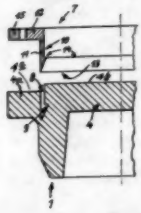
RUBBER STOPPER WITH PLASTIC PULL RING

Hans Wimmer, Aachen, Fed. Rep. of Germany, assignor to The West Company, Phoenixville, Pa.

Continuation of Ser. No. 126,888, Mar. 3, 1980, abandoned. This application Jul. 29, 1981, Ser. No. 288,020

Int. Cl.³ B65D *39/00, 39/16, 41/28*

U.S. Cl. 215—300 **6 Claims**



1. A closure assmbly for containers or the like comprising a stopper made of resilient material including a flange overlying the axial end face surrounding the discharge opening in the container, a gripping member detachably secured to the stopper including a body portion and a ring member pivotally connected to the body portion and adapted to overlie the flange of the stopper, said ring member being hinged to said body portion at diametrically opposed hinge locations and an overcap having a peripheral skirt portion and a top flange overlying at least the ring member and the juncture of the ring member and the body portion.

4,394,923

THREADED CAP WITH INNER PLUG

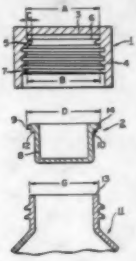
Hiroaki Sugiyama, Numazu, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

Filed Jan. 5, 1982, Ser. No. 337,210

Claims priority, application Japan, Jan. 14, 1981, 56-2851[U]

Int. Cl.³ B65D *41/04*

U.S. Cl. 215—329 **3 Claims**



1. A cap for a container, comprising a cap body and an inner plug fitted therein, said cap body having an annular groove in the inner wall thereof, said inner plug having a cup-shaped body and an outwardly extending annular radial flange on the uppermost portion of said body, said flange having an annular shoulder on a lower face thereof so as to define an upper flange portion and a lower flange portion of smaller diameter than said upper flange portion, said upper flange portion being received in said annular groove in said cap body, and the lower face of said lower flange portion being engageable with the upper edge of the mouth of the container when said cap is fitted on the container, said cap body having a threaded portion on said inner wall thereof and below said annular groove, said threaded portion having radially inwardly projecting ridges and being engageable with a thread on the container, the internal diameter of said annular groove in said cap body being substantially the same as the internal diameter of said ridges of said threaded portion, and the external diameter of said annular flange on said inner plug being slightly smaller than said internal diameters of said annular groove and said ridges.

4,394,924

PROCESS FOR MAKING GABIONS PROVIDED WITH INNER PARTITIONS

Giulio Zaccheroni, Bologna, Italy, assignor to S.p.A. Officine Maccaferri gia Raffaele Maccaferri & Figli, Bologna, Italy

Filed May 12, 1981, Ser. No. 262,881

Claims priority, application Italy, Jun. 10, 1980, 67902-A/80

Int. Cl.³ B65D *6/08, 25/04*

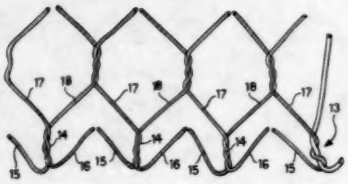
U.S. Cl. 220—19 **3 Claims**

1. A process for the articulated connection of an edge portion of a hexagonal-mesh, wire-netting panel to a further netting panel intended to form the bottom of a gabion, said edge portion comprising a marginal row of meshes of which each adjacent pair has a common side formed by twisting two wires together, free end portions of said two wires diverging each to form a side of a respective one of said pair of meshes, wherein said articulated connection is effected by:

bending each said free end portion of wire back into said respective one of said pair of meshes to form a hook, so that each common side of said marginal row of meshes terminates in two said hooks; and

inserting said common sides through a row of meshes of said

further netting panel and laterally shifting and withdrawing said hexagonal-mesh wire-netting panel so as to engage said hooks with the netting of said further panel to form the articulated connection.



4,394,925

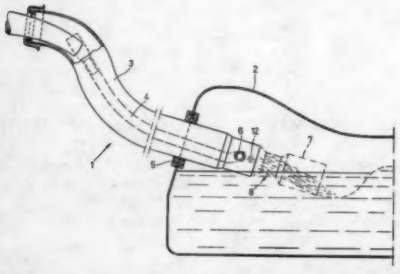
FUEL TANK-FILLER PIPE PARTICULARLY FOR MOTOR VEHICLES

Egon Rump, Cologne, and Wolfgang Franzen, Hurth, both of Fed. Rep. of Germany, assignors to Ford Motor Company, Dearborn, Mich.

Filed May 29, 1981, Ser. No. 268,452

Int. Cl.³ B65B *3/04*; B67C *3/00*; G05B *00/00*

U.S. Cl. 220—86 R **5 Claims**



1. A fuel tank-filler neck for avoiding the return of fuel from a fuel tank during the filling process, said fuel tank-filler neck being adapted to be disposed sloping upwards from said fuel tank at an oblique angle, comprising a filler pipe, an air vent being provided in a lower portion of said filler pipe adapted to be disposed within said fuel tank; a mouth at an upper end of said filler pipe adapted to receive a fuel pump nozzle; a Venturi-type neck of reduced diameter extending said lower portion of said filler pipe below said air vent; and an air vent pipe extending within said filler pipe from said mouth to said air vent in said lower portion of said filler pipe.

4,394,926

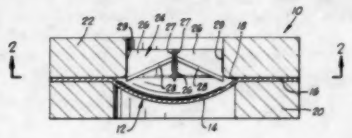
REVERSE BUCKLING RUPTURE DISK APPARATUS

Sam A. Ou, Bixby, and Ronald J. LaPelle, Tulsa, both of Okla., assignors to BS & B Safety Systems, Inc., Tulsa, Okla.

Filed Feb. 18, 1982, Ser. No. 350,100

Int. Cl.³ F16K *17/40*

U.S. Cl. 220—89 A **2 Claims**



1. An improved reverse buckling rupture disk apparatus comprising:

a reverse buckling rupture disk including a concave-convex portion connected to an annular flat flange portion by a transition connection;

at least one support member for supporting said flat flange portion of said rupture disk in a pressure relief area; and

knife means attached to said support member and positioned with respect to the concave-convex portion of said rupture disk whereby upon the reversal thereof, said concave-convex portion is severed by said knife means, said knife means comprising:

four blade legs positioned at right angles to each other having sharpened cutting edges thereon attached together at the internal ends thereof and attached to said support member at the external ends thereof, each of said blade legs having at least a portion of the cutting edge thereof inclined towards said rupture disk from the internal end to the external end thereof and having a portion of the cutting edge adjacent the transition connection of said rupture disk extending towards the concave-convex portion thereof beyond the plane of the annular flange portion thereof whereby upon reversal of the concave-convex portion of said rupture disk, said concave-convex portion is progressively severed by said cutting edges of said blade legs from points adjacent said transition connection to the center of said concave-convex portion of said rupture disk; and

a spike attached to said knife means at the point where the internal ends of said blade legs are attached together positioned extending towards said rupture disk whereby upon reversal of said concave-convex portion of said rupture disk, said concave-convex portion is punctured by said spike.

4,394,927

METALLIC CONVENIENCE CLOSURE

Edgar H. Zysset, Sylvania, Ohio, assignor to General Can Company, Inc., City of Industry, Calif.

Filed Sep. 14, 1981, Ser. No. 301,554

Int. Cl.³ B65D *17/36, 17/34*

U.S. Cl. 220—273 **5 Claims**

1. A metallic convenience closure for a cylindrical container comprising

a central panel,

an endless severing line formed in the central panel and defining a central removable portion and a peripheral fixed portion,

means forming a part of the fixed portion for attaching a closure to the end of a container to close the end,

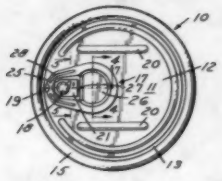
a manually graspable pull-tab attached to the removable portion of the panel and having a nose portion movable upon lifting of the tab into position adjacent the score line for severing the score line,

said tab including a first portion riveted to said removable portion of the panel,

a second portion extending radially outwardly toward the score line and terminating in said nose portion,

and a manual grasping portion integral with the second portion and extending radially inwardly,

said first portion having at least one straight edge,



said removable portion of the panel having a portion thereof deformed including a complementary straight edge engaging the straight edge of said first portion of the tab preventing rotation of the tab about the axis of the rivet thereby maintaining registry of the nose portion with the score line during the opening of the convenience closure.

4,394,928

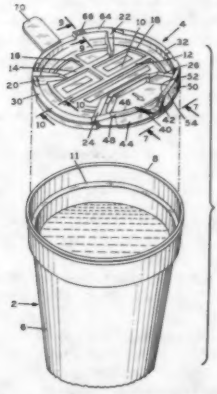
SPLASH-PROOF CONTAINER AND COVER

Morris Philip, c/o Philip Knitting Mills, 26 Bruckner Blvd., Bronx, N.Y. 10454

Continuation-in-part of Ser. No. 138,444, Apr. 22, 1980, Pat. No. 4,322,014, which is a continuation-in-part of Ser. No. 61,197, Jul. 27, 1979, abandoned. This application Mar. 20, 1981, Ser. No. 246,043

Int. Cl.³ B65D *41/26, 51/16*

U.S. Cl. 220—366 **6 Claims**



1. A splash-proof container for liquids and a cover recessed within the open end of said container, said container having an upwardly extending flange defining the perimeter of its open end and extending upwardly above said cover and a shelf interconnecting said flange and the body of said container, said shelf extending substantially at right angle to the vertical axis of said container and transverse to said body and said flange and circumferentially around said vertical axis, said cover having a peripheral rim defining the outer perimeter thereof, said peripheral rim having flat portions thereof in engagement with said shelf, said peripheral rim having raised portions extending upwardly away from said shelf, said raised portions having spaced rib passages extending generally radially inwardly from said raised portions and said peripheral rim toward the center of said cover and opening into said container, liquid and air ports extending through said raised portions to the exterior of said container, said shelf, said raised portions in said peripheral rim, said generally radial rib passages and said ports forming connecting passages for liquid to flow from said container when said container is tilted and for air to flow thereinto but forming baffles and deflectors for the liquid contents of said container when said container is vertical and is shaken.

4,394,929

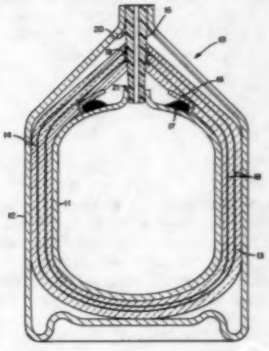
CRYOGENIC LIQUID STORAGE CONTAINER HAVING AN IMPROVED ACCESS CONDUIT

Nandlal P. Patel, Indianapolis, Ind., and Roger J. Dolida, Kingwood, Tex., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Apr. 10, 1981, Ser. No. 252,949

Int. Cl.³ B65D *25/18;* F17C *13/00*

U.S. Cl. 220—421 **1 Claim**



1. A vacuum insulated cryogenic container comprising:

an inner vessel for holding a cryogenic liquid, said inner vessel having an access opening;

an outer shell enclosing said inner vessel in a spaced apart relationship so as to form an evacuable space therebetween, said outer shell having an access opening disposed substantially in alignment with said access opening of said inner vessel;

thermal insulation material disposed in said evacuable space; and

an access conduit joining said access opening of said outer shell to said access opening of said inner shell such that said inner vessel is supported within the outer shell in said spaced apart relationship by said access conduit; wherein said access conduit is an elongated body having a substantially constant inside diameter of cylindrical configuration and a variable outside diameter which decreases linearly in dimension within said evacuable space to form a gradual taper from a point proximate to the juncture of said access conduit with said outer shell to a point proximate the juncture of said access conduit with said inner vessel, said variable outside diameter of said access conduit decreases linearly such that the ratio of stress in said conduit due to bending moment to said strength of said conduit material is substantially constant along the length of said conduit within said evacuable space between said two juncture points, said access conduit being composed of a material whose strength increases with decreasing temperature.

4,394,930
ABSORBENT FOAM PRODUCTS

Ralf Korpman, Somerset City, N.J., assignor to Johnson & Johnson, New Brunswick, N.J.

Filed Mar. 27, 1981, Ser. No. 248,387
Int. Cl.³ H05B 3/68; A47J 41/00; B32B 27/00; C08J 9/00
U.S. Cl. 220—444 19 Claims

1. An absorbent foam product prepared by mixing together a solid, particulate, water-insoluble, water-swellable polymer having a gel capacity of at least 10, a solid, particulate blowing agent, and a liquid polyhydroxy organic compound and allowing the mixture to foam.

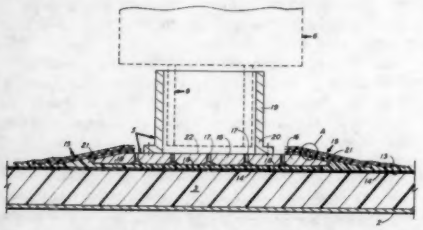
14. An absorbent article comprising a foam coated substrate, said foam coated substrate obtained by (a) mixing together a solid, particulate, water-insoluble, water-swellable polymer having a gel capacity of at least 10, a solid, particulate blowing agent, and a liquid polyhydroxy organic compound to obtain a foamable composition, (b) coating said composition onto a substrate, and (c) allowing the mixture to foam.

19. A dual walled container for transporting aqueous fluids having a breakable inner wall and a non-breakable outer wall and having in a portion of the space between the two containers walls, a foam prepared by mixing together solid, particulate, water-insoluble, water-swellable polymer having a gel capacityy of at least 10, a solid, particulate blowing agent, and a liquid polyhydroxy organic compound and allowing the mixture to foam.

4,394,931
HEAT-INSULATED CONTAINER PROVIDED WITH A LOCATING AND/OR SUPPORTING DEVICE

Terence Cotgreave, Deeside, Wales, and David A. Cliffe, Middleton, England, assignors to Shell Internationale Research Maatschappij B. V., The Hague, Netherlands

Filed Apr. 27, 1981, Ser. No. 258,028
Claims priority, application United Kingdom, Apr. 25, 1980, 8013743
Int. Cl.³ B65D 25/02, 90/04, 25/10
U.S. Cl. 220—453 13 Claims



1. A heat-insulated container for liquefied gases, comprising a rigid outer shell internally lined with a heat-insulating rigid polyurethane foam material and provided with a means for locating and supporting structures or apparatus to the inner surface of said container, wherein:

said locating means comprises a plate member formed of a material having a low coefficient of thermal expansion;

said plate member being bonded to the inner side of said heat-insulating material with a cured epoxy resin formulation;

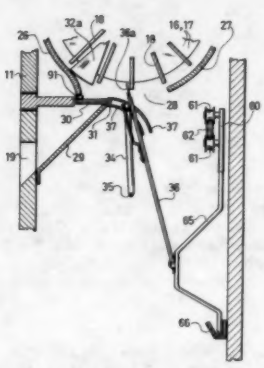
said plate member being provided with means for securing or locating a structure or apparatus thereto; and

a laminate collar comprising a fiber material and a cured epoxy resin formulation mounted about the periphery of said plate member, said laminate collar being bonded to said plate member and said heat-insulating material with a cured epoxy resin formulation.

4,394,932
VENDING MACHINE HAVING TILTABLE FLAP CLOSURE

Allan Ahlström, Mahults Herrgard, Simlangsdalen, Sweden 31038

Filed Aug. 14, 1981, Ser. No. 292,429
Int. Cl.³ G07F 11/52
U.S. Cl. 221—83 4 Claims



1. A vending machine of the type where a number of drums are arranged in a cabinet to be rotatable about a horizontal shaft and which includes a mechanism for selecting either of the drums and a release mechanism permitting rotation of a selected drum, the machine further comprising

a front shield and a rear shield each covering less than 90° of the lower circumference of said drums, said front shield being stationary while said rear shield is swingable about the shaft carrying said drum between a first position in which it leaves a passage between itself and said front shield and a second position in which it closes said passage

a flap tiltable about a horizontal axis to occupy either of two positions and adapted in one of said positions to partly close said passage, and

an actuator operable by said release mechanism for rotating a drum selected by said selector mechanism and to tilt said flap into the other of its said positions.

4,394,933
CAPSULE ORIENTING APPARATUS

E. Michael Ackley, 1273 N. Church St., Moorestown, N.J. 08057

Filed Apr. 29, 1981, Ser. No. 258,745
Int. Cl.³ B65G 47/24
U.S. Cl. 221—173 23 Claims

1. Apparatus for orienting capsules having telescoping cap and body portions, said apparatus comprising:

means for supplying, in random orientation, capsules having telescoping cap and body portions;

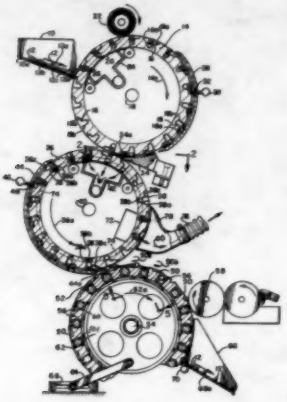
rectifying means for receiving said capsules in random orientaton and for delivering said capsules in uniform orientation;

and selection means for receiving said capsules from said rectifying means and for segregating any of said capsules which are not in uniform orientation, said selection means including:

(1) a transfer mechanism having a set of pockets for receiving said capsules from said rectifying means and for moving said capsules to a discharge point, each of said pockets having a recessed portion disposed perpendicular to the direction of movement of said transfer mechanism and sized larger than said body portions of said capsules and smaller than said cap portions of said capsules;

(2) means for driving said capsules from said rectifying means into said pockets in said transfer mechanism,

whereby capsules having their body portions in said recessed portions of said pockets are loosely held and capsules having their cap portions in said recessed portions of said pockets are tightly held;



(3) means for discharging said loosely held capsules from said pockets in said transfer mechanism at said discharge point; and

(4) means for ejecting said tightly held capsules from said pockets in said transfer mechanism at an ejection point.

4,394,934

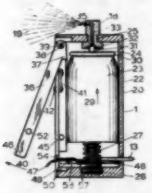
FLUID DISPENSING ANTI-BURGLAR DEVICE

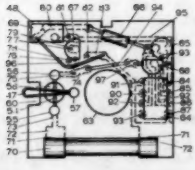
Charles R. Fegley, 1606 Frush Valley Rd., Laureldale, Pa. 19605

Continuation of Ser. No. 53,990, Jul. 2, 1979, abandoned. This application Mar. 9, 1981, Ser. No. 242,053

Int. Cl.³ B67B 7/24

U.S. Cl. 222—5 **27 Claims**





1. A fluid dispensing anti-burglar device for use with a pressurized container, the device comprising:

(a) a body member;

(b) means for supporting said pressurized container in said body member, wherein said pressurized container has a fluid-dispensing element adapted to release fluid under pressure from said pressurized container when actuated;

(c) a passageway in said body member having an entry section at one end thereof;

(d) dispensing element-actuating means mounted in said body member and adapted to engage and actuate said fluid-dispensing element;

(e) spring means biased to force said fluid-dispensing element and said dispensing element-actuating means into engagement with each other, thereby causing said fluid-dispensing element to be actuated;

(f) trigger means adapted to releasably retain said spring means in a cocked position in which said fluid-dispensing element and said dispensing element-actuating means are separated from each other;

(g) trigger-actuating means associated with said trigger to actuate said trigger upon the application of an electric current to said trigger-actuating means, whereby said spring is released from its cocked position causing said fluid-dispensing element to be actuated, and fluid under pressure is released from said container to pass through said passageway;

(h) delay means for causing the delay of the application of electric current to said trigger-actuating means after electric current is applied to said device, thereby permitting the removal of said electric current if the electric current is accidentally applied to the device;

(i) and a circuit board containing the trigger-actuating means and the delay means mounted within said body member.

4,394,935

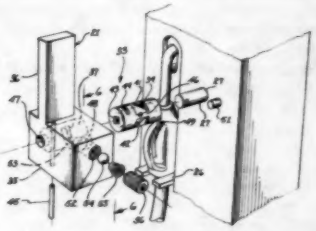
ZERO SETTING MECHANISM FOR SERVICE STATION PUMPS

Mario Orlando, 2320 E. North La., Phoenix, Ariz. 85021

Filed Feb. 13, 1981, Ser. No. 234,337

Int. Cl.³ B67D 5/26

U.S. Cl. 222—35 **9 Claims**



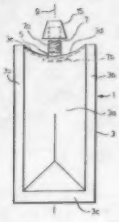
1. An actuating mechanism comprising an actuatable shaft, an actuating member adapted to rotate a predetermined distance in one direction and the reverse thereof, a coupling element between said actuatable shaft and said actuating member and attached to said actuatable shaft, said coupling element and said actuating member being adapted to move relative to each other, movable stop means on said coupling element, fixed stop means for engagement by said movable stop means, interengaging means between said coupling element and said actuating member having one position for effecting movement of said coupling element upon movement of said actuating element until engagement of said fixed stop by said movable stop, whereupon relative movement in one direction occurs between said coupling element and said actuating element, said interengaging means having a second position for effecting movement of said coupling element in the reverse direction upon movement of said actuating element in the reverse direction to a predetermined position, and means for moving said interengaging means from said second position to said one position while holding said actuating member stationary.

4,394,936

DEFORMABLE CONTAINER AND A FLAT PIECE FOR MAKING A CONTAINER

Henri Shavit, General Guisanstrasse 1, 4144 Arlesheim, Switzerland

Filed Oct. 14, 1981, Ser. No. 270,988
Int. Cl.³ B65D 35/08, 35/14
U.S. Cl. 222—107 9 Claims



1. A deformable container of semi-rigid material consisting of,

a. a planar first work piece resistant to thermoplastic deformation with an at least one side having a fusible coating thereon,

b. a shaped folding edge means defining a center segment with an opening therethrough,

c. a first side wall segment transverse to the said center segment commencing at a section of the said shaped folding edge means and terminating at the periphery of the said first work piece furthest from the said shaped folding edge,

d. a second side wall segment transverse to the said center segment commencing at a section of the said shaped folding edge symmetrically opposite that of the commencement of fold of the first side wall segment and terminating at the periphery of the said first work piece furthest from the said shaped folding edge from whence the second side wall segment commenced,

e. said center segment disposed to controllably deflect the said first and second side wall segments into depressed cavities therein having an elevation following the shaped folding edge means and thereto fixedly separate the first side wall segment and second side wall segment proximately situated to the said shaped folding edge,

f. side edge means on the periphery of the said first and second wall segments defining the depressed cavities therein and disposed to be fusibly mated to form a hollow space for filler material,

g. closing edge means around the periphery of said mated side walls defined by the unfused portions of the said fused right and left side alls disposed to be fusibly mated after filling the said hollow space,

h. a second work piece consisting of an extended collar means and a discharge opening means with a connecting means thereon projecting transversely from the said collar with a bore through the longitudinal axis of the said discharge opening means and extended collar means, said discharge opening means disposed to project through the said opening in the said central segment and said collar means to be fusibly connected to the said fusible coating, and

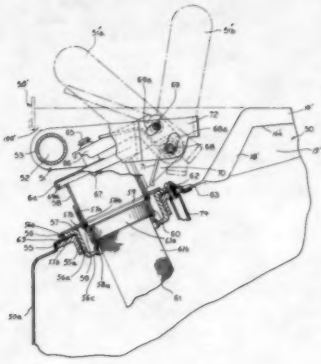
i. a closing lid means operatively associated with the said connecting means on the said discharge opening means to stop discharge of the filler material.

4,394,937

SAFETY CAN CONVERSION APPARATUS

Frank S. Flider, Mattoon, Ill., assignor to Justrite Manufacturing Company, Chicago, Ill.

Filed Nov. 3, 1980, Ser. No. 203,588
Int. Cl.³ B65D 47/08
U.S. Cl. 222—189 20 Claims



12. An improved safety closure adapter arrangement for mounting on a storage container such as the type known as a Jerry can, said container including a hollow interior for receiving fluid contents, the upper surface of said container being provided with an opening though which said fluid content may be poured, said improved safety closure adapter arrangement comprising:

pour spout means;

means for securing said pour spout means in said opening;

safety cap means, said safety cap means adapted to seat on the outer surface of said pour spout means in closing relation to said pour spout means whereby a substantially fluid-and-vapor-tight seal results when said safety cap means is in a closed position;

operating handle means;

pivot support means, said pivot support means designed to be secured to the upper end of said container proximate to said opening;

said pivot support means supporting said operating handle means for pivotal movement thereof;

link means, said link means connecting said safety cap means to said operating handle means whereby pivotal movement of said operating handle means is effective to selectively move said safety cap means from a closed position to an open positon relative to said pour spout means;

said operating handle means being pivotally connected on one side and extending over and across said spout's outer end opening, whereby said operating handle makes supporting and stabilizing contact with the bottom of a stacked Jerry can when said safety cap means is in its closed position;

spring means, said spring means cooperating with said link means to bias said link menas to a default position wherein said safety cap means is securely seated on said pour spout means in said closed position;

said improved safety closure adapter arrangement being designed to fit completely within the open region of the Jerry can proximate to said opening when in said closed position, whereby said handle means, said link means, said pour spout means, and said safety cap means do not extend beyond the sides of said container or above a line extending from the elevated horizontal handle of said Jerry can.

4,394,938

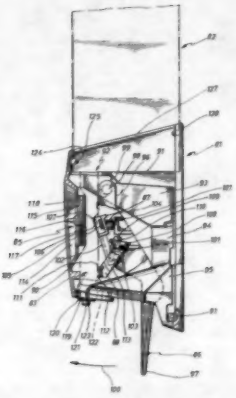
DISPENSER AND PACKAGE FOR LIQUID OR GRANULAR MATERIALS

John R. Frassanito, San Antonio, Tex., assignor to Sani-Fresh International, Inc., San Antonio, Tex.

Filed Aug. 11, 1980, Ser. No. 176,909

Int. Cl.³ G01F *11/02*

U.S. Cl. 222—207 **12 Claims**



1. Apparatus for dispensing liquid or granular materials, for use with a package which contains liquid or granular material and has a resilient tube associated with said package, comprising:

a housing, said housing including means for supporting said package;

a backup block, having a compression surface thereon, associated with said housing;

a dispensing arm having a first end portion pivotally associated with said housing and having a second, free end portion;

a first dispensing block associated with said dispensing arm, said first dispensing block being disposed adjacent the compression surface of said backup block; and

a second dispensing block pivotally and yieldably mounted (associated) with respect to said dispensing arm, said second dispensing block disposed beneath, and spaced from, the first dispensing block whereby, upon an actuating force being imposed upon the free end portion of said dispensing arm, the first dispensing block contacts the resilient tube at a first predetermined impact point to compress the resilient tube against the compression surface of the backup block, and the second dispensing block contacts the resilient tube at a second predetermined impact point spaced from, and below, said first impact point, to apply a force to the resilient tube.

4,394,939

DISPENSER CONTAINER FOR VISCOUS FLUIDS

Günter Thor, Krefeld-Traar; Albert Stöffler, and Diethelf Mehl, both of Düsseldorf, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Düsseldorf-Holthausen, Fed. Rep. of Germany

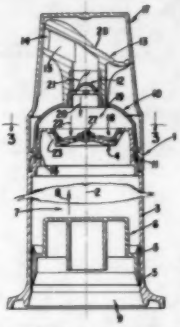
Filed Jan. 19, 1981, Ser. No. 226,149

Claims priority, application Fed. Rep. of Germany, Sep. 22, 1980, 3035728

Int. Cl.³ B65D *83/00, 37/00*

U.S. Cl. 222—207 **9 Claims**

1. A dispensing container intended for single use prepared by pressure diecasting, which comprises a container body provided at one end with a resiliently compressible portion including a mouthpiece; a storage chamber to hold material to be dispensed; a piston member arranged at the other end of said container to define a boundary of the storage chamber, the piston member being movable towards and restrained from movement away from said compressible portion; a top surface to define another boundary of the storage chamber; and an elastically compressible pump means defined by said compressible portion and by said top surface and having an inlet valve in the top surface, an outlet valve, and a pump chamber between the valves, said inlet valve comprising (1) an annular slot



extending circularly in the top surface symmetrically to the longitudinal axis of the container and having a cross-section extending at an angle of from about 45° to 75° from the direction normal to the container axis and (2) a circular cover ring held sealingly in front of the annular slot and elastically under constant stress, the cover ring being held by three or more spokes radiating from a hub positioned in the center of the top surface.

4,394,940

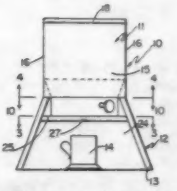
DISPENSER FOR FLUENT MATERIALS

Oscar F. A. Peterson, 3125 Portage Ave., Winnipeg, Manitoba, Canada R3K 0W4

Filed May 11, 1981, Ser. No. 262,317

Int. Cl.³ G01F *11/24*

U.S. Cl. 222—276 **5 Claims**



1. A dispenser for fluent materials comprising in combination a hopper for holding said material, said hopper including an apertured base, said apertured base including a pair of feeding apertures one on each side of a center line of said base, a metering and dispensing plate supported below said base, actuating means extending from said plate for partial rotational movement thereof relative to the vertical axis of said dispenser from one dispensing position through to another dispensing position and vice versa, means to support said plate relative to said base, dispensing means situated below said plate and operatively connected therewith, and means in said plate for metering fluent material from said hopper and dispensing same through said dispensing means, said means in said plate including aperture means formed through said plate, one of said aperture means aligning with one of said feeding apertures in said base and the other of said apertures aligning with said

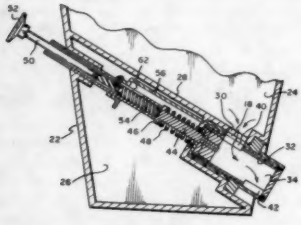
dispensing means, when said plate is in one dispensing position, and the other of said aperture means aligning with the other of said feeding apertures and the one said aperture means aligning with said dispensing means, when said plate is in the other dispensing position, a pair of movable wall portions one in each of said aperture means in said plate, linkage means operatively extending between said actuating means and said movable wall portions for moving said wall portions relative to said aperture means to vary the volume thereof, said aperture means comprising an elongated slot formed through said plate and having a metering portion at each end thereof, said actuating means including a rod rotatably mounted in said plate and extending into the center of said slot, said linkage means comprising a pair of crank arms each pivotally connected by one end thereof, to one end of said rod and by the other end thereof one each to one of said movable walls.

4,394,941

FLUID DISPENSER

Giuseppe Recine, Philadelphia, Pa., assignor to Thomas L. Shannon, Jr., Philadelphia, Pa.

Filed Aug. 31, 1981, Ser. No. 297,691
Int. Cl.³ B01D *53/04*
U.S. Cl. 222—355 **4 Claims**



1. A dispenser for dispensing fluent material comprising:

an outer tubularly shaped body member including an opening in a side wall adjacent the first end thereof and having a second open end;

an inner tubularly shaped member within said outer member and axially movable with respect thereto, both ends of said inner member being closed, a first opening in a side wall of said inner member adjacent the first end thereof and a second opening in an opposite side wall adjacent the second end thereof;

means for biasing said inner member toward the first end of said outer member to a fill position wherein the opening of said outer member coincides with said first opening of said inner member and wherein the portion of said inner member having said second opening is within said outer member;

a plunger means extending from the first end of said outer member and being connected to said inner member for moving said inner member to a dispensing position wherein the portion of said inner member having said second opening extends outward beyond the second end of said outer member, and

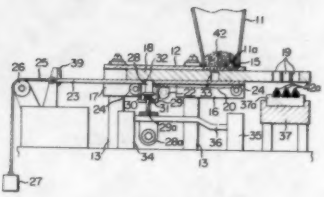
a closure means for closing communication between the opening in said outer member and said first opening in said inner member prior to movement of said inner member.

4,394,942

AUTOMATIC APPARATUS FOR SUPPLYING A FIXED QUANTITY OF PARTICLE OR POWDER

Yoshitomo Yoshioka, Tokyo, Japan, assignor to K.K. Yoshioka Seisakusho, Tokyo, Japan

Filed Mar. 17, 1981, Ser. No. 244,861
Claims priority, application Japan, Jul. 11, 1980, 55-093861
Int. Cl.³ G01F *11/10*
U.S. Cl. 222—361 **13 Claims**



1. Apparatus for repeatedly and laterally transferring a predetermined amount of powdered or particle material contained in a fixedly located hopper having an outlet port to a fixedly located working table installed separately at a lateral distance from said hopper, comprising:

measuring transfer means provided below said hopper and which is reciprocably movable laterally from an original position below said hopper to a predetermined position above said working table, and laterally back to said original position below said hopper;

measuring cavity means including at least one through hole of a predetermined configuration provided vertically and penetratingly through said measuring transfer means such that said at least one through hole is located at a position above said working table when said measuring transfer means is at its predetermined position above said working table, and said at least one through hole is located at a position directly below said outlet port of said hopper when said measuring transfer means is at said original position below said hopper;

gate means provided beneath said measuring transfer means and which includes means for interlocking with said measuring transfer means to move with said measuring transfer means from its original position to its said predetermined position, said gate means including means for closing the bottom of said at least one through hole of said measuring cavity means during said movement from said original position to said predetermined position, said interlocking means including means for releasing said gate means from said measuring transfer means at said predetermined position, said gate means being slideable back to its original position when so released, thereby leaving the bottom of said at least one through hole open directly above said working table at said predetermined position;

said measuring transfer means comprising a main substantially horizontally arranged plate of a predetermined thickness reciprocably driven to reciprocate between said original and said predetermined positions along a given path;

said gate means comprising a bottom plate provided beneath said main plate and contacting the bottom of said main plate for closing the bottom of said at least one through hole during said movement from said original position to said predetermined position; and

an upper plate substantially horizontally arranged above said main plate and having an opening therein in registration with said outlet port of said hopper and being in fixed position relative to said hopper;

said main plate having a solid portion which covers said opening in said upper plate during movement of said main plate between said original and predetermined positions, thereby maintaining said outlet port of said hopper in a closed condition during movement of said main plate; and

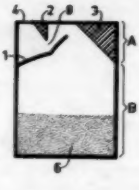
said upper plate, said main plate and said bottom plate comprising a sandwich-type structure with said main plate interposed between said upper and bottom plates and being slidable in the horizontal direction relative to said upper and bottom plates.

4,394,943

TILTING TRAP CHAMBER

Göran Sjönell, 11 Askrikevägen, Lidingö, Sweden

Continuation of Ser. No. 147,380, May 7, 1980, abandoned. This application Jan. 18, 1982, Ser. No. 340,032
Claims priority, application Sweden, May 16, 1979, 7904286
Int. Cl.³ G01F 11/26
U.S. Cl. 222—456 **8 Claims**



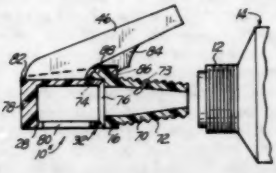
1. A container for dispensing measured amounts of a powdered material comprising a top wall, a bottom wall and sidewalls connecting said top and bottom walls, said top wall being provided with a discharge opening, a partition being disposed adjacent said discharge opening and extending downwardly from the bottom surface of said top wall, a first inclined wall extending upwardly from the sidewall below said discharge opening, said first inclined wall having one end attached to said sidewall and the other end being free and extending upwardly beyond said partition below the bottom surface of said top wall, and a second inclined wall extending downwardly from said bottom surface of the top wall towards the sidewall opposite to said first inclined wall, openings being provided between said first and second inclined walls, between said free end of said first inclined wall and said bottom surface of said top wall, and between the lower end of said partition and said first inclined wall form a flowpath for said powdered material, and said second inclined wall preventing the presence of a column of the powdered material above the opening between said free end of said first inclined wall and said bottom surface of said top wall when said container is tilted during dispensing of said powdered material.

4,394,944

VALVED CLOSURE FOR DISPENSING CONTAINER

Jakob Rech, Detroit, Mich., assignor to Jerome Applefield and Sneldon Applefield, both of Southfield, Mich.

Continuation of Ser. No. 943,534, Sep. 18, 1978, abandoned, which is a continuation-in-part of Ser. No. 726,418, Sep. 24, 1976, Pat. No. 4,141,476. This application Sep. 15, 1980, Ser. No. 187,321
Int. Cl.³ B65D 47/30
U.S. Cl. 222—553 **9 Claims**



1. A closure cap for a dispensing container, said closure cap being operable by a finger of the hand holding said container, said closure cap comprising a housing, means for attaching said housing in communication with the interior of said container, a substantially rectangular slotted dispensing aperture formed in a wall of said housing, a pair of exterior side surfaces on said housing each extending along one of a pair of opposite edges of said slotted dispensing aperture, said side surfaces being mutually disposed such as to substantially converge toward the centerline of said slotted dispensing aperture and to extend away from said aperture to a point below said slotted dispensing aperture centerline, a cylindrical bore having an axis parallel to the centerline of said slotted dispensing aperture and disposed in said housing such as to be intersected by said slotted dispensing aperture, a cylindrical valve body disposed rotatably in said bore and extending at least from one side of said housing to an opposite side, said cylindrical valve body having a peripheral surface normally obturating said slotted dispensing aperture and projecting slightly through said slotted dispensing aperture, said valve body having a radial passageway therethrough placing the interior of said housing in communication with the exterior of said housing through said slotted dispensing aperture when said valve body is rotated in said bore from a first position whereby said passageway is out of registration with said slotted dispensing aperture to a second position whereby said passageway registers with said slotted dispensing aperture, said slotted dispensing aperture having each of said pair of opposite side edges chamfered such as to be substantially tangential to and diverging from the peripheral surface of said valve body and forming at least one sharp edge engaging the peripheral surface of said valve body whereby a ribbon of pasty material dispensed from said container is sheared off upon rotation of said valve body from said second to said first position, said peripheral surface of said cylindrical valve body projecting beyond the opposite edges of said slotted dispensing aperture such that cleaning of the edges of said aperture is greatly facilitated, an elongated lever integral with said valve body and extending generally alongside the longitudinal axis of the dispensing container from the neck toward the bottom portion of said dispensing container, said lever being for rotation of said valve body by a finger and having a substantial surface engageable by said finger, means holding said valve body in position for rotation in said bore and preventing longitudinal motion therein, said means comprising a slot through said housing formed opposite said slotted dispensing aperture, said lever projecting through said slot and being adapted to engage one side of said slot for limiting rotation of said valve body in one direction to said first position and to engage the other of said slot for limiting rotation of said valve body in opposite direction to said second position, said slot having a length corresponding substantially to the dimension of said lever along the longitudinal axis of said valve body such as to prevent longitudinal motion of said valve body in said cylindrical bore in said housing, wherein said valve body is a hollow cylinder having a closed end and an open end placing the interior of said housing in communication with the exterior of said housing through the passageway in said valve body, said passageway being a substantially rectangular aperture in the wall of said cylinder.

4,394,945

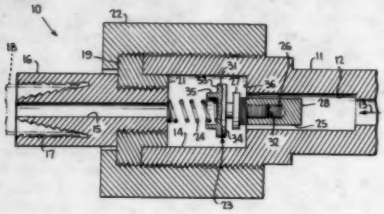
VALVE HAVING SUCK-BACK FEATURE

James H. Taylor, Jr., Plainville, Conn., assignor to Loctite Corporation, Newington, Conn.

Filed Aug. 6, 1981, Ser. No. 290,421
Int. Cl.³ B65D 5/72
U.S. Cl. 222—571 **8 Claims**

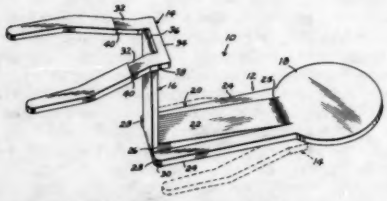
1. In a valve assembly comprising a housing containing a liquid discharge passage, a discharge nozzle extending from said passage, a discharge valve in said passage for closing the flow of liquid therethrough upon engagement with a valve seat, and said passage downstream of said valve defining a variable volume chamber in communication with said nozzle for creating a suck-back flow of liquid from said nozzle upon an increase in volume of said chamber, the improvement

wherein said valve is spring-biased into a closing position and is moved into an open position in response to a predetermined level of liquid pressure in said passage upstream thereof, said valve having a portion engaging said valve seat in said closing position, said valve seat being defined by the wall of said discharge passage upstream of said variable volume chamber, and said valve having a stop shoulder thereon axially spaced from said valve portion, the wall of the variable volume chamber adjacent to said valve seat defining an abutment, said stop



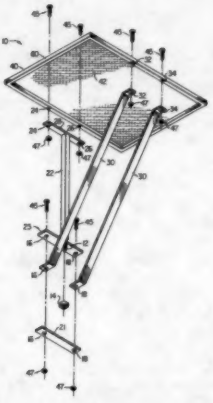
shoulder and said valve portion being disposed in said chamber adjacent said abutment, said stop shoulder and said valve portion being disposed in said chamber when said discharge valve is in said open position, whereby upon a decrease of said liquid pressure below said predetermined level said valve moves into said closing position and thereafter continues movement upstream into said passage until said stop shoulder and said abutment interengage the volume of said chamber thereby expanding to effect said suck-back flow of liquid from said nozzle.

4,394,946
COLLAPSIBLE BOOTJACK
Robert C. McCormick, Grand Prairie, Tex., assignor to Hy-Jacker Products, Inc., Santa Maria, Calif.
Filed May 18, 1981, Ser. No. 264,377
Int. Cl.³ A47J 51/02
U.S. Cl. 223—115 **3 Claims**



1. A compact foldable bootjack, comprising:
an elongated horizontal base having a forward bifurcated end portion;
an elongated tongue struck out of said base adjacent its bifurcated end,
said tongue having a transverse forward edge surface disposed above the upper surface of the base;
an elongated upstanding planar link pivotally connected at its depending end portion with the bifurcated end portion of said base and normally contacting said tongue edge surface for preventing rearward pivoting movement of said link; and,
a normally horizontal yoke comprising a generally U-shaped planar member having a bight portion and forwardly projecting diverging legs adapted for frictionally engaging a boot quarter when disposed therebetween to facilitate removal of the boot from the user's foot,
said yoke legs straddling the upper end portion of said link and pivotally connected therewith with said bight portion normally contacting the adjacent rearward surface of said link for preventing upward pivoting movement of the yoke legs,
whereby said yoke legs may be pivoted downwardly to lie in the plane of said link and said yoke and said link may be pivoted forwardly and downwardly as a unit to underlie the plane of said base when not in use.

4,394,947
AUTOMOBILE CARGO CARRYING RACK
Paul Tartaglia, 12414 Veronica Cir., Dallas, Tex. 75234
Filed Mar. 16, 1981, Ser. No. 244,262
Int. Cl.³ B60R 9/06
U.S. Cl. 224—42.43 **1 Claim**

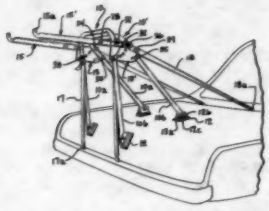


1. An all purpose cargo carrying rack for connecting to the tongue of a standard trailer hitch, said carrying rack comprising:
a platform forming a horizontal supporting surface for cargo to be carried, said platform including a rectangular frame surrounding said supporting surface;
securing means for connecting said platform to the trailer hitch tongue, said securing means including:
(1) a vertical member having a first horizontal plate member at one end having means for aligning and releasably securing to one of the sides of said frame, the other end of said vertical member having a threaded extension for passing through an aperture in the trailer hitch tongue to releasably secure said vertical member by means of a threaded nut, a second horizontal plate member adjacent to said threaded extension and offset therefrom;
(2) a pair of spaced struts having means for releasably securing one end of each strut to a side of the frame opposite said one of the sides, said struts constructed to extend from the side of the frame opposite said one of the sides downwardly toward and below said second horizontal plate member;
(3) a third horizontal plate member;
said second horizontal plate member, said third horizontal plate member, and the ends of said spaced struts opposite said one end of each strut having means to substantially vertically align the second and third horizontal plate members and to releasably secure them and said ends of said spaced struts together while a portion of the trailer hitch extends between said second and third horizontal plate member.

4,394,948
BICYCLE CARRIER FOR VEHICLES

Joseph V. Graber, 3739 County Trunk M, Middleton, Wis. 53562

Filed Mar. 8, 1982, Ser. No. 356,197
Int. Cl.³ B60R 9/10
U.S. Cl. 224—314 11 Claims



1. A foldable bicycle carrier for mounting on a body portion of a vehicle comprising:

(a) front and rear transverse frames of generally U-shaped configuration each formed of one-piece tubular stock and each having first and second leg portions and a transverse intermediate portion integral with one end of the first and second leg portions and extending therebetween,

(b) front vehicle engaging feet on the free ends of each of the first and second leg portions on the front transverse frame and rear vehicle engaging feet on the free ends of each of the first and second leg portions on the rear transverse frame,

(c) first and second bicycle support arms,

(d) first and second side plates,

(e) means including said first and second side plates connecting the front and rear transverse frames at a location adjacent their intermediate portions for relative movement between a folded position in which the leg portions on the front frame are disposed adjacent the leg portions on the rear frame and an open position in which the leg portions on the front frame diverge relative to leg portions on the rear frame in a direction away from said intermediate portions to space the front vehicle engaging feet from the rear pair of vehicle engaging feet,

(f) arm mounting means mounting one end portion of the first and second bicycle support arms respectively on the first and second side plates for angular adjustment relative thereto and relative to the front and rear transverse frames through a plurality of positions in which each of the arms extend outwardly from the rear transverse frame at different angles to a plane through the front and rear vehicle engaging feet, and

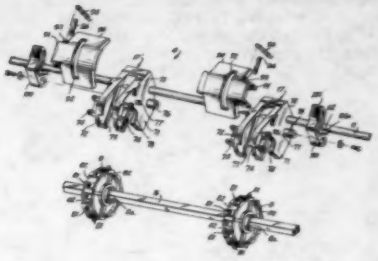
(g) strap means for attaching the bicycle carrier to a vehicle with the front and rear vehicle engaging feet resting on a body portion of the vehicle.

4,394,949
PIN WHEEL FEED MECHANISM

Yoshifumi Gomi, Shiojiri, Japan, assignor to Epson Corporation, Nagano and Kabushiki Kaisha Suwa Seikosha, Tokyo, both of, Japan

Filed Apr. 13, 1981, Ser. No. 253,971
Claims priority, application Japan, Apr. 15, 1980, 55-51128[U]
Int. Cl.³ G03B 1/24
U.S. Cl. 226—76 10 Claims

10. A feed mechanism for transporting documents having perforations along the marginal edges thereof, the improvement comprising a pin wheel having a plurality of equiangularly spaced pins which project radially from the surface of said wheel rotatably supported on said feed mechanism, said pins successively engaging in said perforations in said documents as said pin wheel rotates, the engagement of said perforations with said pins creating bunched portions of said documents between adjacent pins as said documents are fed, said wheel having a notch formed in the surface thereof between

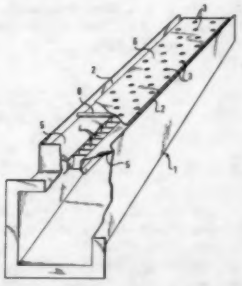


each pair of adjacent pins, said bunched portions of said documents projecting in said notches to prevent disengagement of said perforations from said pins.

4,394,950
APPARATUS FOR FLOATINGLY MOVING A LENGTH OF MATERIAL

Carl Kramer, Am Chorusberg 8, 5100 Aachen, Fed. Rep. of Germany

Filed Jun. 30, 1981, Ser. No. 279,219
Claims priority, application Fed. Rep. of Germany, Jul. 10, 1980, 3026132
Int. Cl.³ B65H 17/32; F26B 13/00
U.S. Cl. 226—97 12 Claims



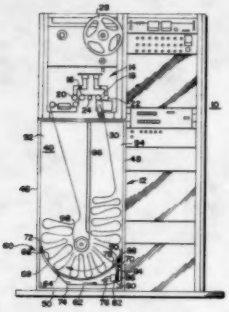
1. A system of nozzles for guiding a length of material in a floating manner by a blowing medium, comprising nozzle frame means with slit nozzles extending laterally transversely to the direction of motion of the length of material having hole nozzles between the slit nozzles, characterized by a guide-vane grille arranged along the axis of the nozzle frame means for the supplied blowing medium and a diffuser joining the guide-vane grille with an exhaust impedance for delaying the blowing medium in separation-free manner.

4,394,951

ACTIVE TAPE STORAGE BIN

Joseph C. Ruda, Noblesville; Richard E. Wartzok, Indianapolis, and Robert J. Wedekind, Logansport, all of Ind., assignors to RCA Corporation, New York, N.Y.

Filed Jan. 19, 1982, Ser. No. 340,772
Int. Cl.³ B65H 17/42; G11B 15/56
U.S. Cl. 226—118 10 Claims



1. A magnetic tape handling apparatus comprising:

(A) a substantially vertical compartment defined by a pair of walls which are so spaced as to require the supply of tape in said compartment to form a stack of folds as the tape is fed into said compartment at one end thereof; said tape being paid out from said compartment at its other end;

(B) a conveyor belt located along the bottom of said compartment for supporting said tape stack; said conveyor belt having an upper run and a lower run;

(C) means arranged in said compartment for shaping at least a portion of the upper run of said conveyor belt along a U-shaped path; and

(D) means for driving said conveyor belt from said one end to said other end to rotate said stack of folds around said U-shaped path for presenting the payout end of said tape stack at said other end for removal from said compartment.

4,394,952

ADJUSTABLE DECK BOARD FEEDER FOR AUTOMATIC PALLET NAILING APPARATUS

Richard A. Crane, Rte. 2, Box 246A, Beaverdam, Va. 23015

Filed Oct. 17, 1980, Ser. No. 197,963
Int. Cl.³ B27F 7/02
U.S. Cl. 227—7 31 Claims

1. A board feeding apparatus for feeding deck boards to a pallet nailing machine comprising:

a plurality of elongated hoppers arranged in parallel for receiving respective stacks of deck boards, each of said hoppers having a board restraining means on one end thereof defining an area permitting passage of a deck board endwise out of said one end, said plurality of hoppers being commonly supported at a rear end by means establishing a pivot about which said hoppers can rotate and at a front end by a common releasable support, said hoppers being pivotable as a unit upon raising of said releasable support;

a plurality of driving members, each respectively associated with one of said hoppers for pushing the deck board a predetermined amount endwise out of said one hopper through said area, said driving members being adjustable in position along the length of said hoppers; and,

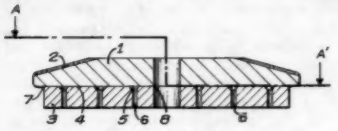
means for simultaneously moving predetermined ones of said driving members from a rest position to a position causing simultaneous pushing of bottom deck boards from the ends of predetermined ones of said hoppers, said moving means thereafter retracting said driving members to said rest position.

4,394,953

METHOD OF JOINING INDIVIDUAL PARTS OF AN X-RAY ANODE, IN PARTICULAR OF A ROTATING ANODE

Alfred Sonnweber, Lermoos; Hubert Bildstein, Reutte, and Lambert Egger, Höfen, all of Austria, assignors to Schwarzkopf Development Corporation, New York, N.Y.

PCT No. PCT/AT80/00022, § 371 Date Mar. 12, 1981, § 102(e) Date Mar. 10, 1981, PCT Pub. No. WO81/00226, PCT Pub. Date Feb. 5, 1981
PCT Filed Jul. 7, 1980, Ser. No. 247,539
Int. Cl.³ B23K 1/20; H01J 35/10; B23K 1/19
U.S. Cl. 228—124 2 Claims



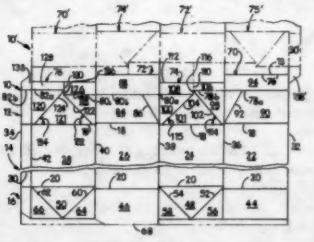
1. A method for joining individual parts of an X-ray anode, in particular of a rotating anode, comprising providing a metal part composed of a high-melting metal or an alloy thereof and at least one graphite part having a graphite surface provided with grooves which are non-intersecting with the edges of said graphite surface, and said graphite part being provided with a plurality of approximately vertical boreholes extending through said graphite part towards said graphite surface and opening into said grooves, soldering the metal part to the graphite surface of said graphite part and removing excessive solder and gases formed during said soldering through said grooves and said boreholes.

4,394,954

CONTAINER AND BLANK FOR CONSTRUCTING SAME

Robert E. Lisiecki, Orchard Lake, Mich., assignor to Ex-Cell-O Corporation, Troy, Mich.

Filed Jul. 6, 1981, Ser. No. 280,739
Int. Cl.³ G65D 5/74
U.S. Cl. 229—17 G 7 Claims



1. A plastic coated paperboard blank for constructing a container adaptable to being folded into a flat end container, the blank comprising; four body panels and a side seam flap; end closure panels respectively connected by horizontal score

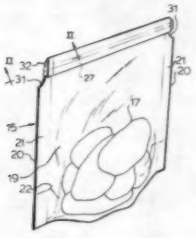
lines to one of the ends of the body panels; end closure panels including a pair of outer panels consisting of upper and lower closure panels respectively connected by horizontal score lines to the other ends of two of the body panels, a front panel and a back panel respectively connected by horizontal score lines to said other ends of the other two body panels, each including a gable panel defined by diagonal score lines extending toward each other from the horizontal score lines, a pair of fold back panels connected by the diagonal score lines to opposite sides of the respective gable panels, and a pair of infold lips separated from each other by a centrally located vertical score line and separated from the respective fold back panels by substantially horizontal score lines, one of which is lower than the other, and both of which meet the respective diagonal score lines at the upper ends thereof at spaced points along the vertical score line, resulting in a short vertical side at the top of each of the gable panels.

4,394,955

BAG WITH BENDABLE RETAINER STRIP, AND METHOD OF MAKING THE SAME

Charles D. Raines, Columbus, Ga., and Earl W. Williams, Phenix City, Ala., assignors to Plicon Corporation, Columbus, Ga.

Filed Feb. 20, 1981, Ser. No. 236,337
Int. Cl.³ B65D *33/02, 33/06*
U.S. Cl. 229—65 **16 Claims**



1. A bag of the type having opposed first and second bag walls with their opposite side edges sealed to one another in respective sealed areas adjacent each of such side edges, and with their bottom edges sealingly attached to one another to provide a bag having a top bag mouth opening, and comprising:

a substantial portion of said first bag wall projecting substantially upwardly as a lip above said second bag wall and thereby above said bag mouth opening;

a bendable retainer strip secured to, carried by, and extending across said lip;

a clearance indentation in each of such sealed side edges of said bag each indentation extending into but not beyond such sealed area and further extending from adjacent to the lower edge of said lip downwardly to a substantial distance below said bag mouth opening, thereby to define an end tab extension at each opposite end of said lip; and

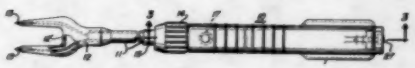
each of said opposite end tab extensions of said lip including said strip and projecting into overhanging relation to said indentations and said end tab extensions each having its respective tip end in alignment with its adjacent such side edge, so that said lip is adapted to be folded over into closing relation to said bag mouth opening and onto the outer face of said second wall, and said end tab extensions being then adapted to be bent over within said clearance indentations onto the outer face of said first wall for maintaining said bag closed, but permitting said bag to be reopened by bending said end tab extensions out of engagement with said first wall and unfolding said lip away from said bag mouth opening.

4,394,956

ELECTRIC STOCK PROD

James S. Andrews, Westminster, and Leonard L. Hierath, Denver, both of Colo., assignors to The Magrath Company, McCook, Nebr.

Continuation of Ser. No. 754,341, Dec. 27, 1976, abandoned. This application Jul. 30, 1979, Ser. No. 62,450
Int. Cl.³ B68B *11/00*; F41B *15/04*
U.S. Cl. 231—2 E **23 Claims**



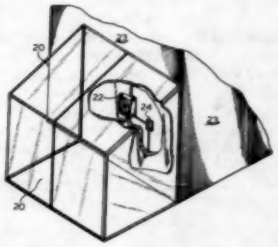
1. A head for an electric animal prod or the like comprising a body of insulating material having a width substantially greater than its thickness and having a shaft attaching means at its rear end adapted to receive a shaft extending rearwardly thereof, a pair of spaced electric contact tips secured to and projecting forwardly from the front end of said body, the front end of said body having a configuration between said tips providing a long insulated path between said tips having a length substantially greater than the spacing between said tips, said body being adapted to be placed laterally against an animal with said tips in position for simultaneous electrical contact with the animal.

4,394,957

SENSOR CONTROL DEVICE

John P. Newton, III, Box 55, Selkirk, N.Y. 12158

Filed Mar. 20, 1981, Ser. No. 245,724
Int. Cl.³ F24F *7/00*; H03K *5/159*
U.S. Cl. 236—49 **24 Claims**



1. A control circuit adapted to be coupled with a power source for providing an output capable of controlling the operation of a device such as a blower, with said circuits output being a function of a change in a controlled environment from a predetermined level, comprising:

sensor means capable of sensing a change in the environment and providing a signal corresponding to said change;

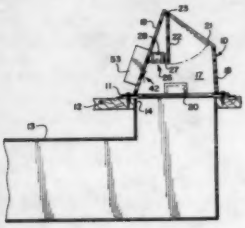
logic means capable of receiving said signal and providing an output for controlling the operation of the device, said logic means includes: first generating means capable of generating periodically a reference pulse of predetermined pulse width; second generating means capable of generating a pulse having a width that varies as a function of the signal corresponding to the change from the predetemined level; and means capable of determining the difference in width of said pulses and based upon said difference gate or inhibit the output of the control circuit so that the output is proportional to the change in the environment with small changes from the predetermined level inhibited from causing undesired oscillation of the output about said level.

4,394,958

AIR FLOW AND CONDITION RESPONSIVE DAMPER

John A. Whitney, Fort Wayne, and Richard Rosenbrock, Bluffton, both of Ind., assignors to Franklin Electric Co., Inc., Bluffton, Ind.

Filed Dec. 23, 1981, Ser. No. 333,753
Int. Cl.³ F24F 13/06
U.S. Cl. 236—49 15 Claims



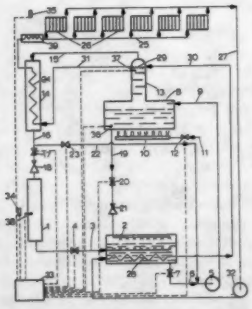
14. A method of controlling the air flow in a forced air system including a blower, a plurality of air outlets, and ducts leading from said blower to said outlets, each of said outlets including a flapper valve that is movable to an open outlet position and to a closed outlet position, said valves being normally in said open outlet position and the force of air through the ducts and to the outlet acting to move the valve to the closed outlet position, a releasable latch for holding the valve in the open outlet position, and a control including a temperature sensor for releasing the latch at a present temperature level, said method comprising the steps of opening said flapper valves, engaging said latches, operating said blower to exert a force on each of said flapper valves, at each of said outlets sensing the temperature utilizing said sensor, and releasing the latch utilizing said control when the sensed temperature is displaced from said preset temperature.

4,394,959

MULTIMODE HEATING SYSTEM AND METHOD FOR HEATING

Auke O. T. de Vries, Leek, Netherlands, assignor to N.V. Nederlandse Gasunie, Groningen, Netherlands

Continuation of Ser. No. 955,609, Oct. 30, 1978, abandoned.
This application Dec. 5, 1980, Ser. No. 213,486
Claims priority, application Fed. Rep. of Germany, Oct. 28, 1977, 2748415
Int. Cl.³ G05D 23/00; F25B 27/02
U.S. Cl. 237—2 B 25 Claims



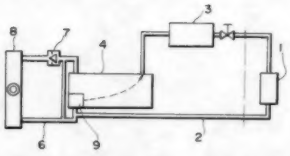
1. A multimode heating system for heating one or more rooms comprising first circulation means for circulating a heating fluid to treat the environment in the rooms, second circulation means for circulating an operating fluid and an absorbing liquid through a heat absorption path, said second circulation means including primary heat pump means through which the operating fluid and absorbing liquid are circulated for absorbing heat from cold and hot heat sources, means for transferring heat within said second circulation means to the heating fluid within said first circulation means by one or more heat exchangers, and control means for controlling changes in the operation of the multimode heating system between first and second operating modes in response to exterior temperature conditions so that when exterior temperatures are above a predetermined point, the system operates in a first mode wherein The operating fluid is circulated through said cold heat source and subsequently mixed with said absorbing liquid for circulation through said hot heat source and when exterior temperatures fall below said predetermined point, said control means changes the system to the second operating mode wherein the flow of the operating fluid bypasses said cold heat source and said absorbing liquid and passes directly as a liquid from said transfer means to said hot heat source to be evaporated there with substantially only the operating fluid being circulated and used to heat the heating fluid in said first circulation means.

4,394,960

HEATING APPARATUS FOR A PASSENGER COMPARTMENT OF A MOTOR VEHICLE

Sadaharu Nakazawa, Tokyo, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jun. 30, 1981, Ser. No. 279,301
Claims priority, application Japan, Jul. 1, 1980, 55-91416[U]
Int. Cl.³ B60H 1/02
U.S. Cl. 237—12.3 C 10 Claims



1. A heating apparatus for a passenger compartment of a motor vehicle, said vehicle having an engine and a liquid cooling circuit system for the engine, said cooling system including a radiator and a pump forming a high pressure portion and a low pressure portion during operation of said pump within the liquid cooling system,

the heating apparatus comprising:

means defining a vehicle cabin heating circuit including a liquid flow passage having an upstream end communicating with the high pressure portion of the liquid cooling system and a downstream end communicating with the low pressure portion of the cooling system so as to allow a portion of the liquid within the cooling system to flow through said liquid flow passage;

a heat exchanger fluidly disposed within said liquid flow passage;

control means ressponsive to cooling fluid temperature for selectively causing cooling fluid to flow through the liquid flow passage and through the heat exchanger means in a first circulating mode wherein cooling fluid in the liquid flow passage is substantially isolated from the cooling circuit to prevent flow through the engine and the engine cooling system to enable the heater means to rapidly heat the portion of cooling fluid in the liquid flow passage without heating fluid in the cooling system for rapid passenger compartment warm-up, and a second circulating mode wherein cooling fluid from the engine and cooling circuit flows into said liquid flow passage of the heating circuit, said control valve means including a normally

closed first valve preventing liquid flow from the cooling circuit into the heating circuit liquid passage in the first circulating mode and being operable to gradually open when liquid temperature in the heating circuit is above a first predetermined level, thereby initiating the second circulating mode wherein fluid in the cooling circuit gradually flows into the heating circuit to prevent a sudden temperature drop in said heating circuit;

means for defining a bypass passage in the heating circuit having one end communicating with the liquid flow passage at the downstream end thereof and an opposite end communicating with said liquid flow passage at the upstream end thereof, said bypass passage being positioned to allow cooling liquid to circulate through the liquid flow passage and bypassing the engine cooling system;

pump means within said liquid flow passage for effecting circulation of liquid through said liquid flow passage and said bypass passage; and

heater means for heating the cooling liquid flowing through said liquid passage.

4,394,961

TRACK FOR TOY VEHICLES WITH JUMPING-OFF AND JUMPING-ON RAMPS

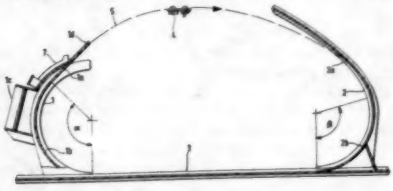
Werner Müller, Blumberg, Fed. Rep. of Germany, assignor to Helmut Darda Spielwaren- und Maschinenbau GmbH, Blumberg, Fed. Rep. of Germany

Filed Jan. 16, 1980, Ser. No. 113,501

Claims priority, application Fed. Rep. of Germany, Jan. 20, 1979, 2902191

Int. Cl.³ A63H *18/08*; E01B *23/00*

U.S. Cl. 238—10 R **10 Claims**



1. A track arrangement for toy vehicles, comprising a vehicle track including arcuately curved jump-off and jump-on ramps between which a toy vehicle can carry out a free-flying jump, at least said jump-off ramp being of flexible material so as to be deflectable transversely of the track elongation, said jump-on ramp having a free-vehicle touchdown end which is wider than the remainder of said jump-on ramp, a handle at a rear side of said jump-off ramp, and a sighting device above said handle so that the jump-off ramp may be sighted-in on the jump-on ramp.

4,394,962

SOLENOID OPERATED FUEL INJECTOR AND CONTROL VALVE

Dennis A. Wilber, Elizabethtown, Ind., assignor to Cummins Engine Company, Inc., Columbus, Ind.

Filed Feb. 23, 1981, Ser. No. 237,257

Int. Cl.³ F02M *47/02*

U.S. Cl. 239—88 **16 Claims**

1. A valve for controlling fluid flow between a low pressure fluid supply and a fluid utilizing device which produces a back pressure which varies above and below the supply pressure, comprising

(a) a valve housing containing a valve cavity, an inlet passage for connection with the low pressure fluid supply, an outlet passage for connection with the fluid utilizing device, and a flow control passage arranged to provide the sole path for fluid communication between said inlet and outlet passages through said valve cavity, said valve housing including a valve seat surrounding said flow control passage;

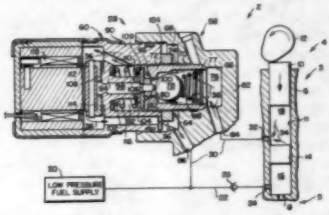
(b) a ball positioned within said valve cavity and movable between a closed position in which said ball contacts said valve seat to form a seal capable of preventing back flow from said outlet passage to said inlet passage and an open position in which fluid may flow in either direction between said inlet and outlet passages;

(c) ball biasing means for continuously biasing said ball toward said closed position with a closing force sufficient to maintain said ball in said closed position even when the back pressure drops below the supply pressure;

and

(d) operator means included within an operator housing for moving said ball between said open and closed positions in response to an electrical control signal, said operator means including

(1) a stem having a longitudinal axis aligned with the center of said ball and movable between an advanced position in which one end of said stem contacts said ball to move said ball to said open position and a retracted position in which a predetermined gap is formed between said one end of said stem and said ball when said



ball is in said closed position to insure full closure of said valve,

(2) operator biasing means for biasing said stem toward said advanced position with an opening force sufficient to overcome the biasing force imparted to said ball by said ball biasing means, said operator biasing means including a coil compression spring positioned coaxially around said stem,

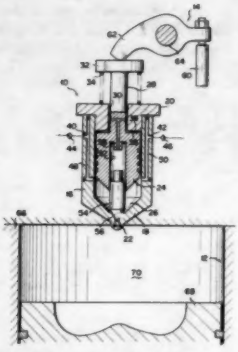
(3) an electromagnetic means for moving said stem from said advanced position to said retracted position when electrically energized and for allowing said stem to be moved to said advanced position under the force imparted thereto by said operator biasing means, said opening force being sufficiently greater than said closing force to cause said ball to move from said closed to said open position in less than one millisecond, and

(4) adjustable connecting means for adjustably connecting said operator housing to said valve housing in a manner to permit said operator housing to be moved in position along the longitudinal axis of said stem relative to said valve housing to adjust the clearance between said valve seat and said ball when said stem is moved to its advanced positions and for adjusting said predetermined gap between said ball and said one end of said stem when said stem is in said retracted position.

4,394,963
FUEL INJECTION NOZZLE

Masatoshi Iwata, Oyama, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Sep. 3, 1981, Ser. No. 299,129
Claims priority, application Japan, Sep. 4, 1980, 55-125045[U]
Int. Cl.³ F02M 61/08
U.S. Cl. 239—89 6 Claims



1. A fuel injection nozzle for the delivery of fuel, premixed with air, to the combustion chamber of a cylinder in an internal combustion engine, comprising:

(a) a hollow nozzle body having formed therein at least one spray hole adapted to open to the combustion chamber of the engine cylinder;

(b) a piston slidably mounted in the nozzle body for reciprocating movement between a first and a second position and defining therein a premixing chamber to be placed in and out of communication with the combustion chamber of the engine cylinder via the spray hole, the piston having a bore formed axially therein;

(c) there being in the nozzle body a fuel inlet port and an air inlet port which are both open to the premixing chamber when the piston is in the first position and which are closed by the piston upon movement thereof from the first toward the second position;

(d) a valve member slidably fitted in the bore in the piston and having one end projecting outwardly therefrom for opening and closing the spray hole in the nozzle body; and

(e) spring means acting between the piston and the valve member for normally causing the latter to close the spray hole in the nozzle body;

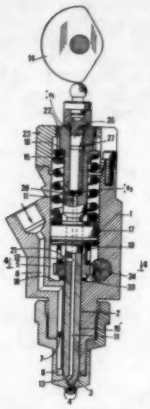
(f) the valve member being adapted to be acted upon, during the piston stroke from the first to the second position, by the compressed fuel-air mixture in the premixing chamber so as to move against the force of the spring means for opening the spray hole.

4,394,964
FUEL PUMP-INJECTOR UNITARY ASSEMBLY FOR INTERNAL COMBUSTION ENGINE

Andre Ecomard, Marly le Roi, and Philippe Pinchon, Rueil-Malmaison, both of France, assignors to Institut Francais Du Petrole, Rueil-Malmaison, France

Filed Jun. 26, 1981, Ser. No. 277,543
Claims priority, application France, Jun. 27, 1980, 80 14369
Int. Cl.³ F02M 45/00
U.S. Cl. 239—90 10 Claims

1. A fuel pump-injector unitary assembly for an internal combustion engine, comprising an injector body having an axial bore with the bottom traversed by at least one fuel spray nozzle, at least one fuel inlet duct opening in said axial bore near the bottom thereof, a plunger or needle slidable in said bore between a first position wherein said plunger is spaced from the bore bottom, and a second position corresponding to the position of the end of injection, where the tapered lower end of the plunger obturates the spray nozzles, said pump-injector unitary assembly comprising means for metering the fuel quantity injected through said spray nozzle, said metering means comprising a transfer passageway provided in the plunger and communicating at a first end with a fuel discharge duct when the plunger is in its first position, with said fuel discharge duct opening through the wall of said axial bore, a metering ring surrounding said plunger and located in an annular chamber of the injector body, with said bore and said discharge duct opening in said annular chamber, and said metering ring having an upper edge of which at least a portion co-operates with the first end of said transfer passageway to effect fuel metering, and means for regulating the position of the ring in the injector body, said transfer passageway having its second end opening at the free or lower end of the plunger and said portion of the upper edge of the metering ring defining the beginning of the injection by obturating said first end of said longitudinal passageway.



4,394,965
PULSATING SHOWER USING A SWIRL CHAMBER

Wolfgang Backe; Wolf-Dieter Goedecke, and Reinhard Schwenzer, all of Aachen, Fed. Rep. of Germany, assignors to Friedrich Grohe Armaturenfabrik GmbH & Co., Hemer, Fed. Rep. of Germany

Filed May 18, 1981, Ser. No. 264,563
Claims priority, application Fed. Rep. of Germany, May 17, 1980, 3018917
Int. Cl.³ B05B 3/14
U.S. Cl. 239—102 5 Claims

1. A shower fixture connected to a fluid supply, said shower fixture comprising:

a swirl chamber,

said swirl chamber being of approximately cylindrical shape and having a central longitudinal axis,

said chamber having an upstream end face, said upstream end face having an inlet opening, said inlet opening being positioned on said central longitudinal axis and in fluid communication with said fluid supply to provide a supply jet, said swirl chamber having a downstream end face having a plurality of outlet apertures arranged along a pitch circle, said pitch circle being concentric with said central longitudinal axis,

and means for generating a control flow, said control flow means comprising one or more tangentially located inlet apertures in the wall of said swirl chamber, said inlet apertures being located near said upstream end face.

4,394,966

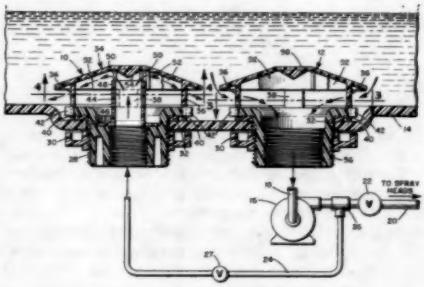
SPRAYING APPARATUS HAVING A FLUID STORAGE TANK WITH AGITATOR AND ANTI-VORTEX TANK FITTINGS

Larry L. Snyder, and Martin T. Smith, Jr., both of Lincoln, Nebr., assignors to Snyder Industries, Inc., Lincoln, Nebr.

Filed May 9, 1978, Ser. No. 904,274

Int. Cl.³ B05B 9/00

U.S. Cl. 239—127 **25 Claims**



1. A spraying apparatus comprising:

a fluid storage tank;

pump means connected to said fluid storage tank by a fluid outlet pipe for pumping fluid from said fluid storage tank;

spray means connected to said pump by a spray pipe for spraying fluid pumped from said fluid storage tank;

a bypass return pipe connected between said spray pipe and said fluid storage tank for returning a portion of the fluid in said spray pipe to said fluid storage tank;

agitator means connected to said bypass return pipe in said fluid storage tank for mixing the fluid in said fluid storage tank by transferring the momentum of the fluid in said bypass return pipe to the fluid in said fluid storage tank, said agitator means comprising agitator cap means overlaying the opening in said bypass return pipe at a fixed distance therefrom for directing the fluid discharged by said bypass return pipe into said fluid storage tank in a spiral rotating fashion, said agitator cap means being formed by a conical plate having its concave side positioned adjacent the opening in said bypass return pipe to provide a focus for the fluid discharged thereby, said conical plate having spiral shaped fins on its concave side for imparting a spiral rotating motion to the fluid discharged by said bypass return pipe, and nozzle means coupled to said bypass return pipe for defining a fixed gap between said conical plate and said nozzle means to control the flow momentum in said fluid storage tank; and

anti-vortex means connected to said fluid outlet pipe and mounted on the bottom wall of said fluid storage tank for preventing the formation of a gyrating vortex as the fluid in said fluid storage tank discharges through said fluid outlet pipe to thereby prevent pump cavitation in said pump means, said anti-vortex means including mounting means mounted on the bottom wall of said fluid storage tank and fastened to said fluid outlet pipe and anti-vortex cap means overlaying the opening of said fluid outlet pipe at a fixed distance therefrom for forcing the fluid in said fluid storage tank to make a substantially 90 degree turn in order to enter said fluid outlet pipe.

4,394,967

GUN FOR APPLYING PAINTS BY HOT PROCESS

Jean Amiaut, 1 Rue des Cluzeaux, F-93240 Stains, France

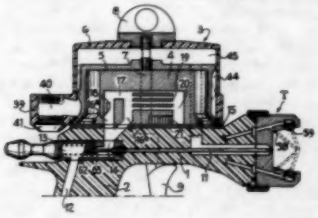
PCT No. PCT/FR80/00184, § 371 Date Aug. 12, 1981, § 102(e) Date Aug. 12, 1981, PCT Pub. No. WO81/01670, PCT Pub. Date Jun. 25, 1981

PCT Filed Dec. 18, 1980, Ser. No. 293,641

Claims priority, application France, Dec. 18, 1979, 79 30910; Oct. 31, 1980, 80 23293

Int. Cl.³ B05B 1/24

U.S. Cl. 239—133 **7 Claims**



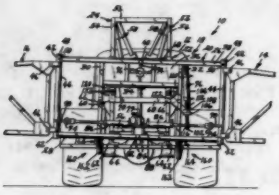
1. A gun for the hot application of paints, comprising a substantially horizontally extending body having a downwardly extending grip, an assembly comprising a cylindrical heating block having a vertical axis and including electric resistances mounted on the body, a first envelope defining with the block a sinuous path for the heating of air, and a second envelope defining a path for paint, means for automatically controlling the temperature of the spraying air, said second envelope being in the shape of a bell pivotally mounted on top of and around the first envelope and defining with means provided on an outer surface of the first envelope communicating first and second annular paths for the paint superimposed around said first envelope and communicating with a chamber defined between end walls of the first envelope and second envelope, said chamber having an outlet conduit which extends through said heating block, a vertical hot air outlet passageway which coaxially surrounds said outlet conduit, said conduit and said passageway separately opening outside said block into said body, said body being of insulating material and carrying a rotary spraying head having lateral branches, each of said branches comprising two air jets at least one of which two jets is adjustable, said block, first envelope and second envelope being in coaxial relation to one another on said vertical axis in said assembly, means for securing said assembly to a top part of said body, said second envelope comprising a lateral boss having a passage which communicates with said first path and second path for the paint, said boss being connectible selectively to a source of paint supplied by gravity located above the body and to a source of paint supplied by aspiration located below said body, and means for allowing said second envelope to be adjusted in position about said vertical axis relative to said first envelope and for securing said second envelope in the adjusted position relative to said first envelope, whereby said source of paint can be placed in a convenient position relative to said body, said vertical axis being so located relative to the grip that said passage in said boss can be placed in close proximity to a second vertical axis in vertical alignment with said grip.

4,394,968

POSITIONING APPARATUS FOR BOOM STRUCTURES

Loren E. Tyler, Box 170, Benson, Minn. 56215

Filed Mar. 30, 1981, Ser. No. 249,066
Int. Cl.³ A01C 23/04
U.S. Cl. 239—167 4 Claims



1. A positioning apparatus comprising:

a boom structure;

means for pivotably mounting said boom structure on a vehicle, said mounting means including a pin member about which said boom structure pendulously swings;

means for moving said boom structure upwardly and downwardly between an upper transit position and lower operating positions, said moving means including an hydraulic cylinder for moving upwardly and downwardly said pin member and said boom structure swinging from said pin member; and

means for angularly self-centering said boom structure when said moving means moves said boom structure from a lower operating position to the upper transit position, said angularly self-centering means including a pair of chains, one said chain attached between said boom structure and said vehicle on each side of a vertical plane passing through said pin member.

4,394,969

SHOWERHEAD CONTROL

Emile Jette, 1328 NE. 110 Ter., Miami, Fla. 33161

Continuation-in-part of Ser. No. 219,851, Dec. 31, 1980, abandoned, which is a continuation-in-part of Ser. No. 868,200, Jan. 9, 1978, Pat. No. 4,273,289, which is a continuation-in-part of Ser. No. 863,694, Dec. 29, 1977, abandoned, which is a continuation-in-part of Ser. No. 790,277, Apr. 25, 1977, abandoned, which is a continuation-in-part of Ser. No. 743,766, Nov. 22, 1976, abandoned. This application Feb. 10, 1981, Ser. No. 233,209
Int. Cl.³ B05B 1/18, 1/32, 7/00
U.S. Cl. 239—414 9 Claims

1. A showerhead device assembly including means for controlling temperature and the flow of water therethrough pivotally connected by a ball and socket means to a shower arm having separate hot and cold water passages extending therethrough comprising:

A. A main housing having passage means between an inlet and a discharge portion including separate hot and cold water chambers divided by a first partition, a water temperature and flow control means in the form of a second partition positioned at the downstream end of said chambers for varying the temperature and volume of water leading to the discharge portion and screwthreads at its downstream end;

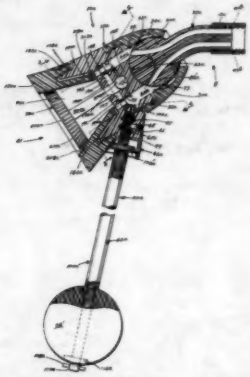
B. The discharge portion including connection means for engaging a valve and spray producing means;

C. The valve and spray producing means comprising:

(a) an annular frustoconical skirt shaped body having an inner surface and an upstream end adapted to contact said second partition to shut off the flow of water,

(b) a disc having a frustoconical peripheral surface with a plurality of grooves, said grooves cooperating with the inner surface of said skirt shaped body to define outlet passages, and a stem extending in an upstream direction for connecting the disc to the first partition,

(c) the connection means comprising screwthreads for cooperation with the screwthreads of said main housing whereby by screwthreading said valve and spray producing means to said main housing the texture of the spray exiting said outlet passages can be varied and the flow of water past said second partition can be shut off by contacting said second partition with the upstream end of said skirt shaped body; and



D. An elongate control means having an upper end carried by said main housing and connected to said second partition and to said valve and spray producing means for;

(a) varying the volume and temperature of the water leading to the discharge portion;

(b) moving the valve and spray producing means with respect to said main housing to vary the spray texture of the spray exiting said outlet passages; and

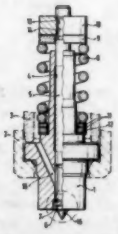
(c) varying the direction of the spray by moving the socket with respect to the ball of said ball and socket means.

4,394,970

FUEL INJECTION NOZZLE FOR COMBUSTION ENGINES

Karl Hofmann, Remseck; Kurt Seifert, Esslingen, and Josef Jungbauer, Erding, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 6, 1981, Ser. No. 232,338
Claims priority, application Fed. Rep. of Germany, Feb. 7, 1980, 3004454
Int. Cl.³ B05B 1/32
U.S. Cl. 239—453 7 Claims



1. A fuel injection nozzle having an inlet end from which direction fuel flows and an injection end from which fuel is

injected for combustion engines comprising a nozzle housing having a flat injection end surface, a bore in said nozzle housing, said bore including a small diameter section and an enlarged cylindrical end portion of uniform diameter which directly adjoins said small diameter section to form a valve seat through which a fuel jet is discharged, said enlarged cylindrical end portion extending from said valve seat to said flat injection end surface of said housing, a valve needle in said bore, said valve needle including a valve needle head portion, said valve needle head portion including a conical section with a cross sectional portion of greater diameter than said valve seat which conical section is arranged to close against said valve seat to close said bore and arranged to open in the direction of fuel flow, said valve needle head portion including a cylindrical portion of uniform diameter which adjoins said conical portion and extends downstream of said conical portion, said cylindrical head portion extends into said enlarged cylindrical end portion of said bore with a slight radial play when said valve needle is seated in a closed position against said valve seat, said valve needle head portion further includes a cone portion extending axially from said cylindrical portion with the vertex end of the cone in the direction of fuel injection to thereby shape the fuel jet emitted by said nozzle.

4,394,971

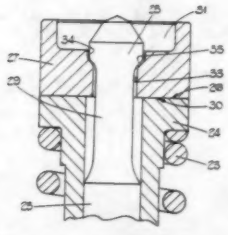
FUEL INJECTION NOZZLE ASSEMBLY

David J. Gaskell, Sudbury, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Mar. 4, 1981, Ser. No. 240,547

Int. Cl.³ F02M *61/08*

U.S. Cl. 239—453 **1 Claim**



1. A fuel injection nozzle assembly for use in a fuel injection nozzle for an internal combustion engine, the nozzle assembly comprising a body portion defining a bore having a seating at one end thereof, a valve member having a stem portion extending through the bore, a head located at one end of the stem for cooperation with said seating, a spring abutment located about said stem, a coiled compression spring positioned between said abutment and said body portion, an enlarged portion on the stem, a collar having a first arcuate aperture extending therethrough and through which can pass the enlarged portion of the stem, second and third arcuate apertures intersecting said first aperture, each of said second and third apertures being sized to accommodate a reduced portion of the stem, said apertures defining a gap through which can pass the reduced portion of the stem, said apertures all having different diameters and a part annular shoulder defined by and recessed in said second and third apertures, said shoulder defining a convex surface and being engaged by a surface of convex form defined on said enlaged portion of the stem, said shoulder being divided into two portions, said portions being non-diametrically located on opposite sides of said first aperture, said collar being engaged by said spring abutment whereby the force exerted by the spring acts to maintain said surface in engagement with said shoulder.

4,394,972

FUEL INJECTION NOZZLES

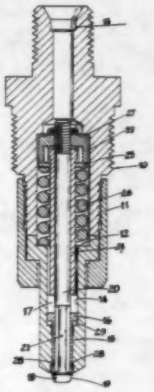
James C. Potter, London, England, assignor to Lucas Industries PLC, Birmingham, England

Filed Apr. 12, 1982, Ser. No. 367,803

Claims priority, application United Kingdom, Apr. 14, 1981, 8111783

Int. Cl.³ F02M *61/00*; B05B *1/32*

U.S. Cl. 239—453 **10 Claims**



1. A fuel injection nozzle for supplying fuel to an internal combustion engine comprising a body defining a chamber, a fuel inlet to said chamber, an outwardly opening valve member extending within said chamber, a head carried by the valve member for co-operation with a seating, resilient means located in the chamber and acting to urge the valve head into contact with the seating the arrangement being such that when fuel under pressure is supplied to said chamber, the pressure acting upon said valve member lifts the head from the seating to allow flow of fuel from said chamber in the form of a spray, a tubular member slidable in the body and located about said valve member, said tubular member being axially movable relative to the valve member, means for limiting the extent of movement of the tubular member as the valve member is moved against the action of the resilient means, said tubular member defining the seating whereby when movement of the tubular member is halted the head is lifted from the seating to allow substantially unrestricted flow of fuel, said tubular member defining orifices which are uncovered to the exterior of the body during the initial movement of the valve member and tubular member against the action of the resilient means.

4,394,973

INJECTION VALVE

Rudolf Sauer, Benningen; Wolfgang Kienzle; Werner Paschke, both of Schwieberdingen, and Waldemar Hans, Bamberg, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Mar. 30, 1981, Ser. No. 249,297

Claims priority, application Fed. Rep. of Germany, Apr. 3, 1980, 3013007

Int. Cl.³ F02M *61/16, 61/18, 51/08*

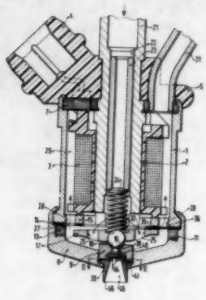
U.S. Cl. 239—467 **4 Claims**

1. An injection valve for fuel injection systems of internal combustion engines including a movable valve element associated with a fixed valve seat in a valve seat body,

said valve seat body having an annular wall recess downstream of said valve seat,

a nozzle means downstream of said valve seat having horizontal fuel guidance bores therein,

said nozzle means having an end portion having a plurality of flat sides,
said end portion protruding into said recess,
and intermediate chambers formed between the sides of the end protrusion and the wall of said recess,
said horizontal fuel guidance bores extending from said intermediate chambers to a spin chamber in said nozzle means,



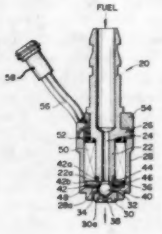
said spin chamber having a frusto-conical interior wall,
said fuel guidance bores extending tangentially of said spin chamber interior wall whereby fuel is tangentially discharged into said spin chamber,
the interior wall of said spin chamber diverging outwardly in the direction of flow whereby a fuel stream emerges from the spin chamber in a conical configuration.

4,394,974

FUEL INJECTOR VALVE

Masaaki Saito, Yokosuka, and Tadaki Ota, Kawasaki, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Mar. 11, 1981, Ser. No. 242,421
Claims priority, application Japan, Mar. 24, 1980, 55-38319[U]
Int. Cl.³ B05B *1/30*
U.S. Cl. 239—585 **6 Claims**



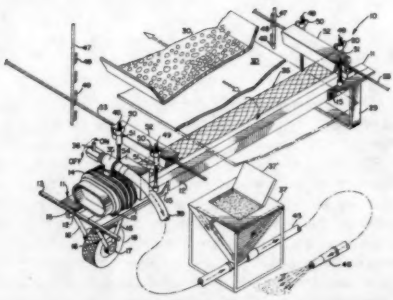
1. A fuel injector valve, comprising:
a casing;
a main magnetic pole securely disposed within said casing and provided with an electromagnetic coil wound thereon, said main magnetic pole being elongate and cylindrical and formed with an axial fuel passage through which fuel is supplied and a tip section;
a valve seat member securely connected to said casing so as to be located opposite to the tip section, said valve seat member being formed with a fuel injection opening through which fuel is dischargeable out of said fuel injector valve, the axis of said fuel injection opening being aligned with the axis of the fuel passage of said main magnetic pole;
a spherical valve member movably disposed within a valve chamber to be filled with fuel, said valve chamber being defined between the main magnetic pole tip section and said valve seat member, the fuel within said fuel chamber being supplied through the fuel passage of said main magnetic pole and dischargeable out of said fuel chamber through the fuel injection opening of said valve seat member; and
a side magnetic pole securely connected to said casing and located spaced around said spherical valve member, the axis of said side magnetic pole being aligned with the axis of said main magnetic pole; and
an adapter member in contact with and interposed between the main magnetic pole tip section and said casing to secure the locational relationship therebetween, said adapter member being generally annular and having inner and outer peripheral surfaces which securely contact the main magnetic pole and said casing, respectively; said adapter member including a cylindrical section containing said inner peripheral surface thereof, and a radially and outwardly extending flange section containing the outer peripheral surface thereof, said cylindrical section being fitted in a peripheral cutout section of said main magnetic pole, said flange section being fitted in a lower inner recess of said casing so that the bottom surface thereof contacts said side magnetic pole.

4,394,975

ROCK DUST BLOWER

Clyde A. Bare, Jr., Box 244; Buddy L. Bare, Box 714, both of Crab Orchard, W. Va. 25827, and Walter A. Hill, Rte. 2 Box 1725, Beckley, W. Va. 25801

Filed Jul. 2, 1981, Ser. No. 279,853
Int. Cl.³ A01C *3/06*
U.S. Cl. 239—654 **4 Claims**



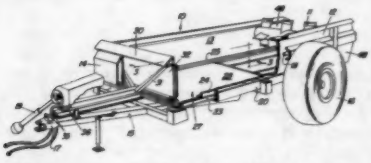
1. A rock dust applying device comprising a framework having mounted thereon a roller adapted to engage with the undersurface of a travelling endless conveyor and to be rotated thereby, a gear train rotated by said roller, a blower mounted on said framework and being driven by said gear train, said blower directing a stream of air through a conduit which directs some of the air through a hopper to thereby agitate a rock dust contained therein which is to be sprayed on to the surface of a mine tunnel or shaft, said blower also directing a stream of air through a conduit extending below said hopper to aspirate some of the dust from within said hopper and to direct the rock dust laden air to a nozzle for spraying the surface of a mine shaft or tunnel with said rock dust laden air.

4,394,976

HYDRAULICALLY OPERATED PUSH-OFF MANURE SPREADER

Rory Rae, Port Colborne, Canada, assignor to Deere & Company, Moline, Ill.

Filed Jul. 9, 1981, Ser. No. 281,746
Int. Cl.³ A01C 15/12, 15/16
U.S. Cl. 239—679 6 Claims



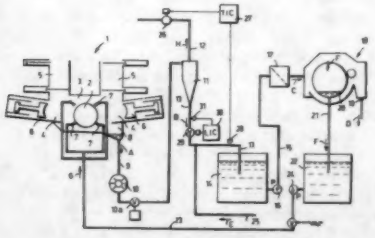
6. In a manure spreader having a box open at its rear end for discharge of animal waste contained therein, said box having a floor structure composed of a rear lower horizontal portion at the rear part of the box, and a front upper horizontal portion supported at its opposite fore-and-aft extending edges to move lengthwise of the box from a front extension of the rear portion to a rear overlying relation to the rear portion, said rear floor portion having an upper plastic surface so that animal waste may slide easily thereover as the forward portion moves rearwardly; transversely spaced parallel and fore-and-aft extending rails mounted on the upper surface of the rear four portion transversely inwardly respectively of said fore-and-aft extending edges of said front floor portion and engaging the underside of the front floor portion for retaining the underside of the front portion out of engagement with the upper plastic surface of the rear floor portion as it moves between its front extension and overlying positions with respect to the rear floor portion, a transverse vertically extending push-off supported to shift lengthwise of the front portion; and power means for shifting the front portion relative to the rear portion and the push-off relative to the front portion.

4,394,977

METHOD FOR IMPROVING THE UTILIZATION OF HEAT ENERGY PRODUCED IN A WOOD GRINDING PROCESS

Ari A. M. Mijala, Tempere, Finland, assignor to Oy Tampella AB, Tampere, Finland

Filed Nov. 4, 1981, Ser. No. 318,095
Claims priority, application Finland, Nov. 18, 1980, 803598
Int. Cl.³ B02C 19/12
U.S. Cl. 241—21 5 Claims



1. A method for improving the utilization of the heat energy produced in a wood grinding process according to which method

wood is ground by means of a rotating grinding member (2) in a grinding space (3) under a pressure exceeding atmospheric pressure,

warm shower water (G) is sprayed into the grinding space,

groundwood pulp (A) is conveyed from the grinding space into a steam separator (11) wherein the heat energy contained in the groundwood pulp is released in the form of steam (H),

the groundwood pulp is brought from the steam separator into a thickener (18) from which removed water is brought back into the grinding space as shower water (G),

water (E) is added to the shower water, and

steam (H) released in the steam separator is recovered for further use,

characterized in that,

the steam separator (11) is pressurized in order to recover under pressure the steam (H) released from the groundwood pulp (A),

the additional water (E) for the shower water (G) is after the steam separator mixed with the pulp suspension (B) relieved of steam,

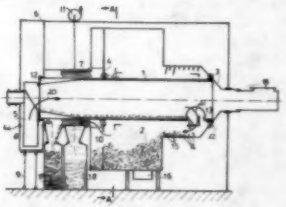
the pressure of the steam (H) released in the steam separator is adjusted so that the temperature of the pulp suspension (B) after the water addition (E) corresponds substantially to the desired temperature of the shower water (G).

4,394,978

METHOD FOR TREATMENT OF WASTE METAL AND LIQUID DROSS

Anton Weiss, Vienna, Austria, assignor to Waagner-Biro A.G., Austria

Filed Feb. 6, 1981, Ser. No. 232,309
Claims priority, application Australia, Feb. 18, 1980, 870/80
Int. Cl.³ B02C 17/04
U.S. Cl. 241—23 7 Claims



1. In a method for treating liquid dross obtained from metal smelting and remelting operations, such as in connection with aluminum extraction, including the steps of pouring the dross from the melting furnace into a skimming trough, charging the dross from the skimming trough into a rotating, substantially horizontal cooling pipe, passing the dross through the cooling pipe from one end to the other so that the inner surface thereof is at least partially wetted thereby, and so that the dross is cooled to a temperature below the melting point thereof and wherein it is granulated, the improvement comprising:

conducting the steps of charging the dross from the skimming trough into the cooling pipe and passing the dross through the cooling pipe substantially in the absence of air or oxygen;

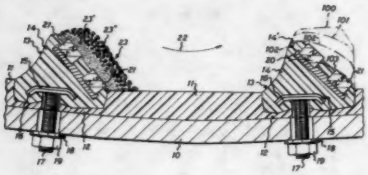
subjecting the granulated dross to an autogenous grinding process; and

separating the ground dross into a granulated metal fraction and a fine-grained fraction, the latter fraction containing substantially powdered metal oxide.

4,394,979
WEAR AND ABRASION RESISTANT WALL STRUCTURE, PARTICULARLY FOR MILLS FOR GRINDING A CHARGE COMPRISING MAGNETIC MATERIAL

Bertil Brandt, Skelleftea, Sweden, assignor to Socared S.A., Switzerland

Filed Jun. 25, 1980, Ser. No. 162,855
Claims priority, application Sweden, Jul. 13, 1979, 7906098
Int. Cl.³ B02C 17/00
U.S. Cl. 241—26 28 Claims

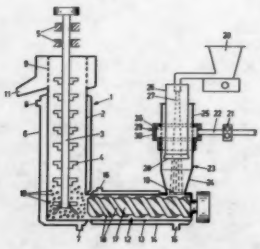


1. A method of operating a mill for processing particulate material in which said mill includes a mill barrel wall defining therein a treatment chamber, means for establishing at points on the barrel wall a magnetic field substantially normal to said barrel wall as said field emanates from said barrel wall into the treatment chamber, and means for rotating said mill barrel, said method comprising the steps of introducing into said chamber particulate magnetic material of sufficient quantity to be attracted to said barrel wall at said points to form on said barrel wall an automatically regenerating abrasion protective layer, rotating said mill barrel, and maintaining said magnetic field at sufficient strength to retain said magnetic material against said barrel wall as the abrasion protective layer at said points during complete rotations of said mill barrel.

4,394,980
DEVICE FOR THE SIMULTANEOUS AND CONTINUOUS FEEDING OF PULVERULENT SOLIDS AND OF LIQUIDS INTO TREATMENT MACHINES

Dieter März, Mannheim; Philipp Schmitt, Lampertheim, and Peter Weidenhammer, Mannheim, all of Fed. Rep. of Germany, assignors to Draiswerke GmbH, Mannheim, Fed. Rep. of Germany

Filed May 6, 1981, Ser. No. 261,245
Claims priority, application Fed. Rep. of Germany, May 16, 1980, 3018729
Int. Cl.³ B02C 23/36
U.S. Cl. 241—46.02 10 Claims

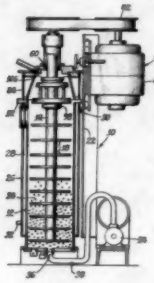


1. Device for the simultaneous and continuous feeding of pulverulent solids and of liquids into a treatment machine, having a feed orifice for solid and liquid materials the orifice being formed on the casing of the treatment machine and having a walled feed branch extending upwardly therefrom, a ring passage located above said orifice having aperture means for the feed of liquid material positioned on the inner wall of the feed branch and means for feeding the solid material located in the center of the ring passage, characterized in that the free cross-section of said aperture means is adjustable.

4,394,981
APPARATUS FOR DISPERSING FINELY DIVIDED SOLID PARTICLES IN A LIQUID VEHICLE WITH A MECHANISM FOR REDUCING SCREEN CLOGGING

George R. Schold, 8460 Macoma Dr. NE., St. Petersburg, Fla. 33702

Filed Jul. 25, 1980, Ser. No. 172,134
Int. Cl.³ B02C 23/36
U.S. Cl. 241—46.17 18 Claims



1. Apparatus for deagglomerating and dispersing solid particles held in agglomerated form and carried in suspension in a liquid vehicle by the action of a dispersing media on the solids comprising:

a mixing vessel having a fluid inlet at one end thereof and a fluid outlet at the other end thereof, said vessel being adapted to have a charge of dispersing media introduced thereinto, and said inlet being adapted to be operatively connected to a pump means whereby a fluid mixture may be moved by said pump means under pressure through said inlet and through the dispersing media in said vessel to said fluid outlet;

a rotatable shaft extending into said vessel and adapted to be driven from a power source;

a rotor separator mounted on said shaft for rotation therewith for separating dispersing media from the fluid mixture, said rotor separator being disposed on said shaft near said fluid outlet and in the path of flow between said vessel inlet and said outlet, said rotor separator including a filter screen surrounding and spaced from said shaft;

agitator means disposed in close association with said separator to prevent dispersing media from clogging said filter screen, said agitator means including

a pair of axially spaced radially extending slinger agitator members disposed at each end of said screen and surrounding and attached to said shaft to rotate therewith and extending radially outwardly substantially beyond the radial position of said screen, and

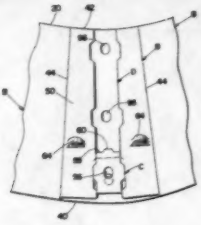
a plurality of circumferentially spaced elongated agitator bars extending between and connecting said slinger agitator bars, said elongated members being disposed radially outwardly from and spaced from said screen.

4,394,982

LINER PLATE FOR GRINDING MILLS

Clive J. Wilson, Scottsdale, Ariz., assignor to Midland-Ross Corporation, Cleveland, Ohio

Filed Mar. 30, 1981, Ser. No. 249,204
Int. Cl.³ B02C 17/22
U.S. Cl. 241—183 15 Claims



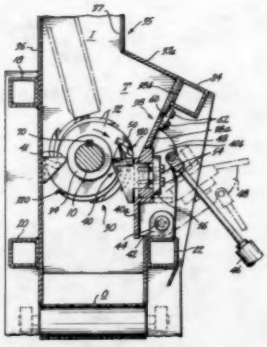
1. A liner plate for grinding mills comprising: a generally transparent shaped plate having front and rear surfaces, opposite sides, and short and long ends, an integral lifter bar section upstanding from said front face adjacent said long end thereof and spaced inwardly from said sides, said integral lifter bar section extending over substantially less than one-half the length of said plate between said ends thereof, at least one bolt receiving hole extending through said integral lifter bar section substantially perpendicular to said plate, and cooperating means on said plate between said integral lifter bar section and said short end for securing a replaceable lifter bar section thereto.

4,394,983

TIRE AND REFUSE SHREDDER

Carl M. Ulsky, Lake Stevens, Wash., assignor to KACA Corporation, Lake Stevens, Wash.

Filed Mar. 2, 1981, Ser. No. 239,219
Int. Cl.³ B02C 18/18
U.S. Cl. 241—243 14 Claims



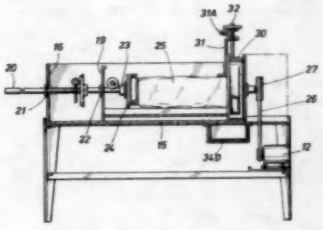
1. A shredder operable to shred vehicle tire carcasses comprising a feed hopper including a descending chute cross-sectionally configured and dimensioned so as generally to both orient and guide the tires in a path of descent, a driven elongated shredder rotor of generally cylindrical configuration mounted extending horizontally across said path of descent with a first side of the rotor substantially adjacent one side of said path, said hopper having a widening recess extending laterally outward from the opposite, second side of the chute path at the level of the rotor axis and for a predetermined height above the same, so as to accommodate the lower portion of the tire swung laterally into the same over the top of the rotor, said rotor comprising a series of disc-like cutters successively spaced from each other and each with a circumferentially projecting cutting element extending from side to side thereof and formed by radially inner and outer faces mutually converging at an acute angle forwardly in the direction of cutter rotation to a cutting edge sharpened so as to pierce through the tire as it bottoms into engagement with the cutter and thereby initiate cutting a flap-like segment out of the tire and, conjointly therewith, initate lateral advancement of the bottom portion of the tire toward said recess, and shredder tooth means comprising a generally horizontal series of successively spaced teeth mounted to project generally horizontally from the hopper's second side substantially at rotor axis level into interdigital relationship with the successive cutters and with side edges in closely spaced relationship with such cutters for shearing of the tire rubber at such side edges by cutting element rotation past the same.

4,394,984

ICE BLOCK LOADING MECHANISM FOR AN ICE SHAVING MACHINE

Rayburn M. Hight, and Paul M. Corrick, both of Houston, Tex., assignors to Polar Bear, Inc., Houston, Tex.

Filed Jan. 5, 1981, Ser. No. 222,545
Int. Cl.³ B02C 13/286, 18/22
U.S. Cl. 241—278 R 17 Claims



1. A feed mechanism for an ice shaving apparatus which comprises:

(a) ram means for engaging a block of ice to be fed into an ice shaving apparatus;

(b) an elongate guide rod connected to said ram means;

(c) means for mounting said guide rod to move axially along a locus which moves said ram means toward and away from the ice shaving apparatus;

(d) means for incrementally advancing said guide rod to thereby advance said ram means;

(e) means for initially positioning said guide rod and said ram means to receive a block of ice between said ram means and the ice shaving apparatus; and

means for releasably and controllably engaging said guide rod which includes;

(1) a loose coil spring about said guide rod;

(2) means for pulling said spring to a tight gripping condition;

(3) means relaxing said coil spring to a loose condition; and

(4) means for anchoring one portion of said coil spring.

4,394,985

WINDING APPARATUS FOR THREADS OR YARNS

Felix Graf, Winterthur, and Armin Wirz, Ossingen, both of Switzerland, assignors to Rieter Machine Works Limited, Winterthur, Switzerland

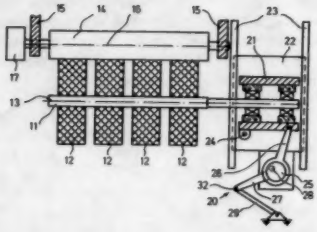
PCT No. PCT/EP80/00037, § 371 Date Mar. 10, 1981, § 102(e) Date Mar. 2, 1981, PCT Pub. No. WO81/00248, PCT Pub. Date Feb. 5, 1981

PCT Filed Jun. 26, 1980, Ser. No. 243,922

Claims priority, application Switzerland, Jul. 10, 1979, 6408/79

Int. Cl.³ B65H *54/42*

U.S. Cl. 242—18 DD 12 Claims



1. A winding apparatus for threads or the like, comprising:

a bobbin support roll upon which there is formed at least one bobbin package;

a friction drive roll cooperating with said bobbin support roll;

each of said rolls having an axis of rotation;

said rolls being arranged substantially mutually parallel to one another and with their axes of rotation located in superimposed fashion in a substantially vertical plane;

one of said rolls being subjected to displacement movements caused by an increase in the size of the bobbin packages formed upon the bobbin support roll;

means for mounting and guiding said one roll to enable said one roll to carry out said displacement movements in a direction substantially parallel to said vertical plane;

means providing a pivot axis for enabling pivotal movement of one of the rolls in a direction substantially parallel to said vertical plane about said pivot axis;

said mounting means including bearing means located at one end of said roll subjected to said displacement movements for supporting said roll; and

coupling means responsive to the displacement movements of said one roll for causing pivotal movements of said one pivotable roll about said pivot axis in the sense of bringing about an automatic parallelization of said rolls with respect to one another.

4,394,986

YARN WINDING APPARATUS

Katsumi Hasegawa, Kusatsu; Takahiro Kawabata, and Shintaro Kuge, both of Otsu, all of Japan, assignors to Toray Industries, Inc., Japan

Filed May 13, 1981, Ser. No. 263,350

Int. Cl.³ B65H *54/08, 59/38*

U.S. Cl. 242—18 R 7 Claims

1. A yarn winding apparatus comprising:

(a) a winding device for winding a yarn to form a yarn package on a bobbin, which includes a pair of winding spindles for mounting a bobbin and capable of being alternately positioned in a winding position of the winding device, a traverse element for imparting a traverse motion to the yarn, and a driving shaft for driving the traverse element;

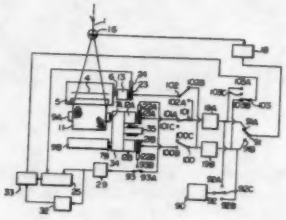
(b) a pair of first motors, each driving a corresponding winding spindle which is in the winding position;

(c) a second motor for driving the traverse element driving shaft;

(d) a pair of spindle speed detecting means, each detecting the speed of rotation of a corresponding winding spindle which is in the winding position, and for generating a first electrical signal corresponding to the detected rotational speed thereof;

(e) means for detecting the speed of rotation of the traverse element driving shaft and for generating a second electrical signal corresponding to the detected rotational speed thereof; and

(f) a pair of means for controlling rotational speed of said motors,



a first speed controlling means including means for controlling one of the pair of first motors which is positioned in the winding position so as to keep a yarn winding speed substantially constant from the beginning to the completion of the winding operation of the yarn package; and

a second speed controlling means including means for controlling the second motor so as to substantially keep the ratio of the rotational speed of the winding spindle to the rotational speed of the traverse element driving shaft at a predetermined value or values from the beginning to the completion of the winding operation of the yarn package in response to the first electrical signal and the second electrical signal.

4,394,987

MECHANISM FOR CAUSING THE ROTATION OF THE SPOOL IN A MACHINE FOR TYING A KNOT

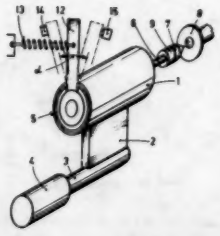
Luigi Pedroia, Via Cadogno 1, 6648 Minusio, Switzerland

Filed Apr. 7, 1981, Ser. No. 251,780

Claims priority, application Switzerland, Apr. 14, 1980, 2832/80

Int. Cl.³ B65H *75/30;* A22C *11/12*

U.S. Cl. 242—46.2 3 Claims



1. In mechanism for rotating a spool adapted to receive a supply of filament about the axis of the spool, a motor, a clutch member driven by the motor and selectively engageable with the spool to rotate the spool, and means to reciprocate the motor bodily along the axis of the spool to engage and disengage the clutch member thereby to drive and release the spool, respectively; the improvement comprising means mounting the

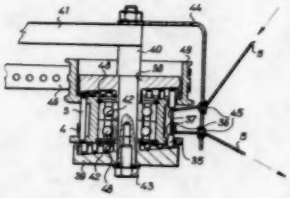
motor for limited bodily rotation about said axis upon an increase in tension in the filament on the spool, and means limiting said bodily rotation of the motor in both directions.

4,394,988

ARRANGEMENT FOR CONSTANT FEEDING OF YARN

Jan Hruby, Svornosti, and Karel Pleskac, Jiraskova, both of Czechoslovakia, assignors to Zbrojovka Vsetin, narodni podnik, Vsetin, Czechoslovakia

Filed Dec. 3, 1980, Ser. No. 212,429
Claims priority, application Czechoslovakia, Dec. 3, 1979, 8322/79; Jun. 6, 1980, 4006/80
Int. Cl.³ B65H 51/22
U.S. Cl. 242—47.12 4 Claims



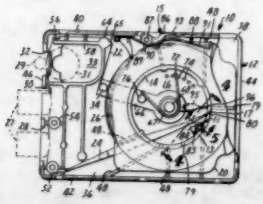
1. Arrangement for the constant feeding of yarn to textile machines, comprising a rotatable cage drum supported on a driven rotatable member coaxially thereof, the circumference of the drum being formed by a number of spaced stable bolts parallel with the rotation axis of the drum, the drum being adapted for the deposition of a number of yarn windings, and elements on the drum shiftable in a direction axially of the drum, the shiftable elements being situated between said stable bolts, the axially shiftable elements being rollers, the middle part of the rollers being recessed to a smaller diameter so as to form faces of the rollers for guiding yarn along the circumference of the cage drum, and comprising a stable face cam firmly connected to a bolt on a holder adapted to be fixed to the frame of a textile machine, said rollers bearing with their extreme faces on said stable face cam.

4,394,989

ADJUSTABLE ENDLESS LOOP TAPE CARTRIDGE WITH SHIPPING LOCK

Alfred H. Moris, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 30, 1981, Ser. No. 259,184
Int. Cl.³ G11B 23/10
U.S. Cl. 242—55.19 A 4 Claims



1. In a cartridge comprising:

a housing adapted to be received in a machine and having access openings adapted to receive heads and a tape drive mechanism in said machine;

a cylindrical hub attached to said housing at a position spaced from said access openings, said hub having a central opening and a slot extending axially across the full width of the hub and communicating with said central opening;

an endless length of tape having a major portion wrapped about said hub to form a coil and a minor portion extending from the innermost wrap of the coil through said slot into said central opening, and around the side surface of the coil to the outermost wrap of the coil; and

means on said housing for defining a tape path for and producing tension in said minor portion, comprising means for guiding said minor portion past said access openings in a predetermined position for engagement by the heads and drive mechanism of the playback machine, a guide pin guiding said minor portion between said access openings and the outermost wrap of said coil, means mounting said guide pin for movement between a first position providing a first path length between said access openings and said coil and a second position providing a second path length longer than said first path length between said access openings and said coil, and means for biasing said guide pin toward said second position with a low force to provide a low tension in the outermost wrap of the coil, the improvement wherein:

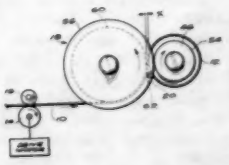
said hub comprises a flexible cantilevered portion having a first end partially defining said slot, having a second end spaced from said first end that is fixed on said housing, and being separated from said housing between said first and second ends, and said cartridge comprises an adjustment member movably mounted on said housing and having a surface contacting said cantilevered hub portion, said adjustment member being movable to change the position of the surface contacting said cantilevered portion and thus change the position of said cantilevered portion radially of said hub to adjust the length of said minor portion and position said guide pin at a predetermined position between said first and second positions.

4,394,990

WEB CINCHING AND WINDING APPARATUS AND METHOD

Maurice A. Kildal, Webster, and Stephen J. Hassall, Churchville, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 19, 1980, Ser. No. 218,592
Int. Cl.³ B65H 17/08
U.S. Cl. 242—65 15 Claims



1. Apparatus for automatically cinching the end portion of a web onto a cylindrical core and winding convolutions of web on the core to form a roll comprising:

means for transporting a web to said core at one speed;

means for guiding the end portion of the transported web around the outer periphery of said core;

core driving means adapted to be (1) drivingly engaged with said core in a first mode of operation for rotatably driving said core at an outer peripheral speed in excess of said one speed for automatically cinching the transported web end portion ontosaid core and winding convolutions of web onto the core to form a roll having a roll surface, and (2)

drivingly disengaged from said core in a second mode of operation;

roll surface driving means adapted to be drivingly engaged with the roll surface in a first operating condition, and drivingly disengaged from the roll surface in a second operating condition, said roll surface driving means being in its second operating condition when said core driving means is in its first mode of operation; and

means responsive to a predetermined roll surface diameter as web is wound on the roll for substantially simultaneously placing said core driving means in its second mode of operation and said roll surface driving means in its first operating condition.

4,394,991

DOUBLE BEARING FISHING REEL

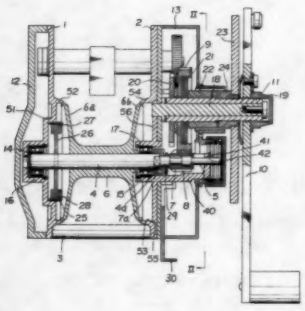
Hideo Noda, Sakai, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan

Filed Jan. 6, 1981, Ser. No. 222,990

Claims priority, application Japan, Jan. 24, 1980, 55-7861[U]

Int. Cl.³ A01K *89/00*

U.S. Cl. 242—84.1 R **8 Claims**



1. A fishing reel comprising a pair of first and second side frames connected opposite to each other at a regular interval; a housing mounted adjacent said second side frame to define an enclosed space between said second side frame and housing; a spool shaft rotatably supported between said side frames and having an extending shaft portion extending through said second side frame and extending outwardly therefrom into said space; a spool disposed between said side frames and rotatable with said spool shaft; a tubular shaft being positioned in said space on said extending shaft portion of said spool shaft, slidable between a position where a clutch element on said tubular shaft engages with a clutch element on said spool shaft and a position where said clutch element on said tubular shaft disengages from said clutch element on said spool shaft, and having a pinion; a driving gear mounted in said space and engaging said pinion; an input shaft carrying said driving gear and having a handle; and first and second bearing cylinders mounted adjacent said first and second side frames for journalling said spool shaft, said second bearing cylinder having a support arm connected therewith and extending into said space in the same direction as said extended shaft portion of said spool shaft, said support arm having at an extending end portion thereof a support member with a shaft bore for supporting said extending shaft portion whereby said support member supports said extending shaft portion.

4,394,992

ENERGY ABSORBER FOR LOAD CARRYING FLEXIBLE PULLING MEANS

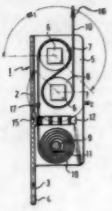
Artur Föhl, Schorndorf, Fed. Rep. of Germany, assignor to Repa Feinstanzwerk GmbH, Alfdorf, Fed. Rep. of Germany

Filed Jan. 8, 1981, Ser. No. 223,428

Claims priority, application Fed. Rep. of Germany, Jan. 14, 1980, 3001091

Int. Cl.³ A62B *35/00*; **B65H** *75/48*

U.S. Cl. 242—85 **4 Claims**



1. Energy absorber for a load carrying flexible belt pulling means for a safety belt system, comprising a rigid body, a wind-up roller as a storing element for the belt pulling means at the body with one end of the belt pulling means fastened to the wind-up roller, at least one non-rotatable friction roller around which the belt pulling means are partly wrapped-around, said friction roller spaced from said wind-up roller and mounted in said body, a form-spring for the belt pulling means disposed between said storing element and the friction surface of said friction roller, said form-spring fixed in the body solely to press the belt pulling means against the body to exert a predetermined tension force on the belt pulling means.

4,394,993

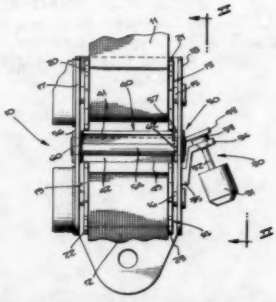
RESILIENTLY MOUNTED SPLIT PAWL LOCKING MEANS FOR DUAL SPOOL RETRACTOR

Nazareth Stamboulian, Los Angeles, Calif., and Fred F. Neumann, Rochester, Mich., assignors to American Safety Equipment Corporation, San Fernando, Calif.

Filed Aug. 17, 1981, Ser. No. 293,117

Int. Cl.³ B65H *75/48*

U.S. Cl. 242—107.4 A **10 Claims**



1. In an emergency locking dual spool safety belt retractor having a frame, two belt storage spools rotatably mounted in said frame, a spool locking ratchet on each spool, inertia sensor means and pawl means operated by said sensor means to engage each said ratchet to lock said spools against further belt protraction, the improvement in pawl means comprising the provision of:

split pawl means for locking said two belt storage spools and including two separate pawl members; and

resilient means for mounting said pawl members to said

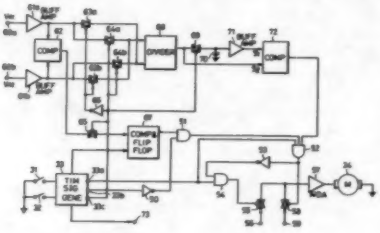
frame and to each other operably located between said spools and ratchets to normally act as a unitary double ended pawl with resilient material thereof being interposed between said pawl members and between said members and said frame whereby in the event either one of said members engages a tooth of one of said ratchets in a tip-to-tip condition, said resilient means will be compressed between said members and said one member will be resiliently urged into engagement with a next tooth of said one of said ratchets.

4,394,994

TAPE FAST-FORWARDING AND REWINDING APPARATUS

Hirotoshi Oono, Yokohama, Japan, assignor to Victor Company of Japan, Kanagawa, Japan

Filed Jun. 19, 1981, Ser. No. 275,282
Claims priority, application Japan, Jun. 20, 1980, 55-83553
Int. Cl.³ G03B *1/04*; G11B *15/32*
U.S. Cl. 242—200 **6 Claims**



1. A tape fast-forwarding and rewinding apparatus comprising:

rotating means for rotating a tape take-up side reel in a direction so as to take up a tape upon tape fast-forwarding mode, and for rotating a tape supply side reel in a direction so as to take up the tape upon tape rewinding mode;

rotation driving means for driving said rotating means so that the tape which is taken up by said tape take-up side reel or said tape supply side reel travels at a first fast-forwarding or rewinding speed, and so that the tape travels at a second fast-forwarding or rewinding speed which is a high speed faster than said first fast-forwarding or rewinding speed;

detection means for substantially detecting the radii of tape rolls of wound tape which are wound around both the take-up side and the supply side reel rotated by said rotating means.

memorizing means for memorizing a ratio between the radii of the tape rolls of wound tape which are substantially wound around both the reels obtained by said detection means, when said tape is travelling at said first fast-forwarding or rewinding speed; and

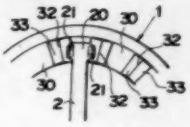
controlling means for controlling said rotation driving means so that said tape travels at said second fast-forwarding or rewinding speed after travelling at said first fast-forwarding and rewinding speed, and controlling said rotation driving means so that the speed of said tape becomes said first fast-forwarding or rewinding speed from said second fast-forwarding or rewinding speed when a value which is a reciprocal of the ratio between the radii of the tape rolls of wound tape which are substantially wound around both the reels obtained by said detection means when said tape is travelling at said second fast-forwarding or rewinding speed, is equal to the value of the ratio memorized in said memorizing means, as a result of comparison performed.

4,394,995

REEL-TURNTABLE TORQUE ADJUSTING MEANS

Hideki Hayashi, and Kazuki Takai, both of Toda, Japan, assignors to Clarion Co., Ltd., Tokyo, Japan

Filed Mar. 23, 1981, Ser. No. 246,702
Claims priority, application Japan, Mar. 21, 1980, 55-37610[U]
Int. Cl.³ G03B *1/04*; G11B *15/32*; B65H *17/02*
U.S. Cl. 242—207 **2 Claims**



1. A reel-turntable torque adjusting means which comprises:

a reel-turntable member for conveying a rotational force to a reel turntable;

said reel-turntable member being formed with a plurality of steps having different heights at an upper peripheral portion thereof;

a spring member having one or more tip ends pressed against the steps, respectively;

said spring member having slanting portions on opposite sides of each of said tip ends; and

a motor-driven friction plate against which said reel-turntable member is pressed by said spring member.

4,394,996

DRAPERY PACKAGE

Eli Heimberg, North Dartmouth, Mass., assignor to Cameo Curtains, Inc., New York, N.Y.

Filed Aug. 6, 1981, Ser. No. 290,555
Int. Cl.³ B65H *75/06*
U.S. Cl. 242—222 **5 Claims**

1. A drapery package assembly comprising:

a core member having a central portion and two enlarged end sections, one of said two end sections containing a substantially uniformly spaced gap adjacent to said central portion,

a longitudinally folded drapery having a top end, a bottom end, and a middle section therebetween,

said bottom end of said drapery being located within said substantially uniformly spaced gap of said one end section of said core member,

said middle section of said drapery being wrapped around the core member in spiral fashion, and

the top end of the drapery lying against and being exposed on the exterior of the wound drapery.

4,394,997

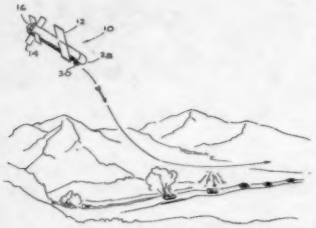
SEQUENTIAL TIME DISCRIMINATION SYSTEM FOR SUB-DELIVERY SYSTEMS

Inge Maudal, Claremont, Calif., assignor to General Dynamics, Pomona Division, Pomona, Calif.

Continuation of Ser. No. 139,947, Apr. 14, 1980. This application Jan. 12, 1982, Ser. No. 345,311

Int. Cl.³ F41G 7/22

U.S. Cl. 244—3.16 **7 Claims**



1. A method for directing a plurality of sub-missiles to selected targets comprising the steps of:

sequentially and at predetermined time intervals releasing a succession of guided sub-vehicles directed to at least one predetermined target;

marking a target upon impact by a sub-vehicle;

detecting the marking of the impacted target; and

directing subsequently released sub-vehicles to preselected targets other than an impacted target.

4,394,998

PROCESS AND APPARATUS FOR EXPLORING THE ATMOSPHERE OF A PLANET

Joseph Taillet, Boulogne, and Jean Maulard, Clamart, both of France, assignors to Office National d'Etudes et de Recherche Aerospatiales (ONERA), Chatillon Sous Bagneux, France

Filed May 18, 1981, Ser. No. 264,852

Int. Cl.³ B64B 1/62

U.S. Cl. 244—31 **8 Claims**

8. An apparatus for exploring the atmosphere for Venus at a predetermined constant altitude, comprising:

a gas tight, rigid enclosure;

means for opening said enclosure in said atmosphere above said predetermined altitude;

and a buoyant assembly located in folded condition in said enclosure; said buoyant assembly comprising:

a first gas tight deformable inflatable envelope accomodating a first container containing water, said first container being constructed to fracture under the pressure forces developed by water vapour at a first altitude in said atmosphere,

a second gas tight deformable inflatable envelope accomodating a second container containing a fluid selected from the group consisting of toluene, 2-octene(cis) and anisol, said second container being constructed to fracture under the pressure forces developed by said fluid at a second altitude lower than said first altitude,

and a payload commensurate in weight with the buoyancy of said envelopes and connected to said envelopes.

4,394,999

REDUNDANT OR EMERGENCY STEERING MECHANISM ESPECIALLY FOR AN AIRCRAFT

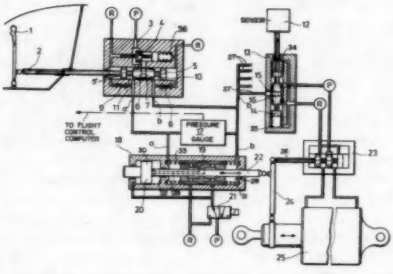
Ludwig Botzler, Neubiberg, Fed. Rep. of Germany, assignor to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung, Munich, Fed. Rep. of Germany

Filed Aug. 18, 1980, Ser. No. 179,102

Claims priority, application Fed. Rep. of Germany, Aug. 21, 1979, 2933780

Int. Cl.³ B64C 13/16, 13/40

U.S. Cl. 244—78 **7 Claims**



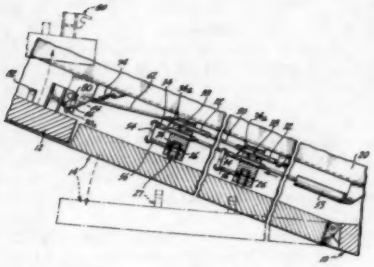
1. A redundant emergency control mechanism for steering an aircraft, comprising pilot controlled mechanical steering means (1, 2), first pressure transducer means (3) operatively connected to said pilot controlled mechanical steering means (3) for converting a movement of said mechanical steering means into a first hydraulic steering control signal component representing a pilot control action, operating condition sensor means (12) which are independent of an electrical power supply for sensing instantaneous flight operating conditions, second pressure transducer means (13) operatively connected to said operating condition sensor means (12) for converting flight operating condition representing signals into flight operating condition representing second hydraulic steering control signal components, pressure operated control actuator means (18) including a source of pressure (P) and conduit means operatively connecting said control actuator means (18) to said first and second pressure transducer means for receiving said first and second hydraulic steering control signal components in a superimposed manner in said control actuator means (18) for converting the resulting combined signal into a mechanical steering control action when an electrical power supply failure occurs in the aircraft, said mechanism further comprising pressure operated power actuator means (25), valve means (23) operatively connecting said second pressure transducer means (13) to said pressure operated power actuator means (25), and mechanical linkage means (22, 24, 26) operatively interconnecting the output (22) of said pressure operated control actuator means (18) to the respective outputs (26, 24) of said valve means (23) and of said pressure operated power actuator means (25), whereby an operation of said control actuator means (18) overrides the normal automatic operation of said power actuator means (25).

4,395,000

LATCH AND LOCK MECHANISM FOR AN AIRCRAFT CARGO DOOR ASSEMBLY

James E. Deviny, Redmond, and Miloslav Puncoch, Seattle, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Sep. 30, 1981, Ser. No. 307,178
Int. Cl.³ B64C 1/14; E05C 1/08
U.S. Cl. 244—118.3 14 Claims



6. A latch and lock mechanism for an aircraft fuselage door assembly wherein an outwardly opening nonplug-type closure member and an inwardly opening plug-type closure member are hinged to the aircraft fuselage along opposite sides of a fuselage doorway such that said closure members meet in the midsection of the doorway when the door assembly is closed, comprising:

latch means affixed to fixed structure of the aircraft fuselage and positioned to receive and secure said outwardly opening closure member in a closed position, said latch means being selectively deployable between a latched position and an unlatched position by means of an elongated push-pull latch actuator rod operably coupled to said latch means;

cam interlock means for securing said latch actuator rod with said latch means in said latched state, said cam interlock means including a lock body having first and second spaced-apart bores and a transverse channel extending therebetween, said latch actuator rod being slidably engaged in said first bore and a push-pull lock actuator rod slidably engaged in said second bore, a locking member slidably engaged in said channel, said latch and lock actuator rods having mutually opposing detents each sized to receive a portion of said locking member in locking relationship, and the dimension of said locking member along said channel being greater than the length of said channel between said bores such that said locking member is constrained to be engaged at all times with the detent of one or the other of said actuator rods; and

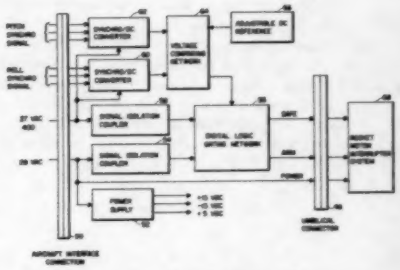
cam-actuated linkage means responsive to opening and closing of said plug-type closure member for moving said lock actuator rod between an unlocked position wherein said detent of said lock actuator rod opens into said channel so as to receive said locking member and a locked position wherein said detent of said lock actuator rod is displaced from said channel so as to constrain said locking member to engage and lock said latch actuator rod with said latch means in said latched position, said linkage including a cam mounted on said inwardly opening closure member, said cam being cooperably engageable with a movable cam follower coupled to said lock actuator rod such that said lock actuator rod is moved to said locked position when said inwardly opening closure member is closed and said lock actuator rod is moved to said unlocked position when said inwardly opening closure member is opened.

4,395,001

ATTITUDE SELECTIVE AIRCREW ESCAPE CONTROL

W. James Stone; Vernon D. Burklund, and Robert B. Dillinger, all of Ridgecrest, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 27, 1978, Ser. No. 890,099
Int. Cl.³ B64D 25/10
U.S. Cl. 244—122 AE 8 Claims



1. An improved escape system for an aircraft having a catapult-boosted ejection seat, wherein the improvement comprises:

a seat mechanism mounted in the aircraft and adapted to be ejected therefrom;

sustainer motor means associated with said seat mechanism for providing ejection movement of said seat mechanism at a predetermined time;

means for firing said sustainer motor means mounted on said seat mechanism;

a pressure hose in open communication between said means for firing said sustainer motor means and said sustainer motor means; and

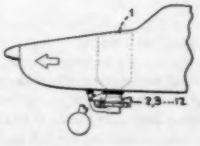
interrupter means associated with said seat mechanism for selectively preventing action of said sustainer motor means, wherein said interrupter means disconnects said pressure hose from one of said means for firing said sustainer motor means and said sustainer motor means during an ejection occurring when the attitude of the aircraft exceeds predetermined limits on pitch and roll.

4,395,002

EMERGENCY DRAINING MECHANISM FOR THE CENTRIFUGAL SPREADER OF AN AIRPLANE

Jouni Kantojärvi, Sompatie 13 E 9, 80230 Joensuu; Pertti Lahti, Lentoasema as 6 B, 80100 Joensuu, and Veikko Lindholm, Uukuniemenkatu 3, 80200 Joensuu, all of Finland

Filed Jul. 21, 1981, Ser. No. 285,512
Claims priority, application Finland, Aug. 4, 1980, 802435
Int. Cl.³ B64D 1/16
U.S. Cl. 244—136 10 Claims



1. An aircraft mounted system for dispensing granular or powdered material including:

a container for holding granular or powdered material, said

container having a lower downwardly facing discharge opening;

pivotal support means mounted on a pivot fixedly positioned with respect to said container for pivotal movement between a first position in which an outer end of said pivotal support means is positioned immediately adjacent and beneath said discharge opening of said container and a second position spaced away from said discharge opening;

a centrifugal dispensing wheel mounted on said outer end of said pivotal support means so as to adjacently face said discharge opening to receive granular or powdered material therefrom when said pivotal support means is positioned in said first position;

motor means supported on said pivotal support means for drivingly rotating said centrifugal dispensing wheel; and

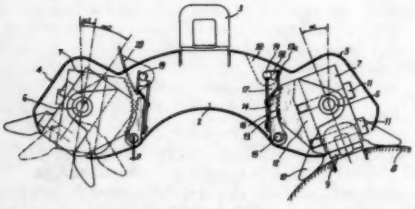
power means for moving said pivotal support means to its second position so as to move said centrifugal dispensing wheel to a position remote from said discharge opening to permit a rapid emergency release discharge of substantially all granular or powdered material in said container.

4,395,003

DEVICE FOR SUSPENDING UNDER AIRCRAFT MISCELLANEOUS LOADS WITH VARIABLE DISTANCE BETWEEN CENTERS

Pierre F. Coutin, Paris, France, assignor to R. Alkan & Cie, France

Filed Jun. 12, 1981, Ser. No. 272,845
Claims priority, application France, Jun. 13, 1980, 80 13252
Int. Cl.³ B64D 1/02
U.S. Cl. 244—137 R **10 Claims**



1. A device for carrying under aircraft multiple loads disposed at variable distances between centers, which comprises:

(a) a central frame structure equipped at its upper face with suspension members adapted to co-act with hook means of the aircraft,

(b) a pair of lateral hollow nacelles carried on each side of said central frame structure,

(c) load supports disposed within each lateral nacelle and presenting load suspension means registering with an aperture of the corresponding nacelle, said load supports being mounted in bearings carried by each nacelle to rotate about the longitudinal axis of said nacelle, and

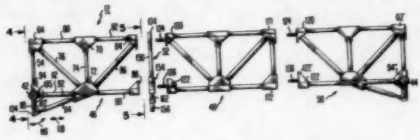
(d) control means associated to said load supports to cause the load supports disposed within each nacelle to rotate about the longitudinal axis of said nacelle, thus ensuring a variation in the distances between centers of the loads suspended to the load supports of one nacelle and to the load supports of the other nacelle.

4,395,004

MODULAR SPACECRAFT STRUCTURES

Eugene R. Ganssle, Skillman, N.J., and Nelson F. Samhammer, Fairless Hills, Pa., assignors to RCA Corporation, New York, N.Y.

Filed Mar. 24, 1980, Ser. No. 133,251
Int. Cl.³ B64G 1/22
U.S. Cl. 244—158 R **12 Claims**



1. A structure adapted to be stored in a launch vehicle, said structure supporting components which together with the structure form a spacecraft, the spacecraft to be launched from the launch vehicle when the latter is in space, said structure comprising:

a first module comprising a first support body having a given longitudinal extent including means adapted to receive said components, said body including a first pair of trunnion members extending in opposite directions from said body, said trunnion members being adapted to be received in respective trunnion receiving means in said launch vehicle, said body including first mounting means for securing another body to said first support body, and

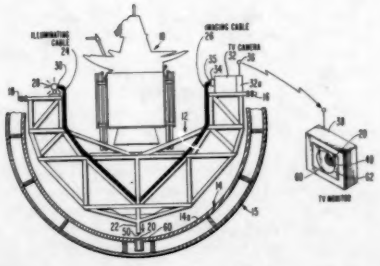
a substantially planar keel structure means of a thickness much less than said longitudinal extent of said first support body and including second mounting means secured to and mating with said first mounting means and including a keel member adapted to engage said receiving means on said launch vehicle, said keel member extending in a direction normal to the direction of said trunnion members, said second mounting means being adapted to receive third mounting means from said another body.

4,395,005

APPARATUS FOR REMOTELY INDICATING ALIGNMENT OF MALE AND FEMALE MEMBERS

Eugene R. Ganssle, Skillman, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 24, 1980, Ser. No. 133,250
Int. Cl.³ B64G 1/64
U.S. Cl. 244—161 **3 Claims**



1. In combination:

a spacecraft cradle adapted to be mounted in the cargo bay of a spacecraft launch vehicle and including means for receiving a spacecraft thereto, a male keel member depending from and below said cradle,

a female keel receiving means adapted to be secured to said launch vehicle cargo bay,

illuminating fiber optic means attached to said keel member for illuminating said keel receiving means during insertion of said keel member therein, and

image display means including fiber optic imaging means attached to said keel member for receiving and remotely displaying the image of said illuminated keel receiving means and its spaced relation to the keel member during said insertion at a location remote from said keel receiving means, said displayed image providing information sufficient to provide alignment guidance of the keel member to said keel receiving means during said insertion.

4,395,006

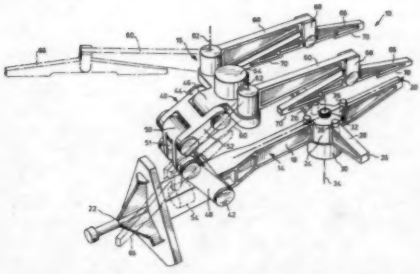
MECHANISM FOR CAPTURING AND RELEASING A SPINNING OBJECT

Henry J. Taylor, Willowdale, Ontario, Canada

Continuation-in-part of Ser. No. 13,379, Feb. 21, 1974, abandoned. This application Feb. 25, 1981, Ser. No. 237,820

Int. Cl.³ B64G *1/64*

U.S. Cl. 244—161 **14 Claims**



1. A coupling system for capturing, braking and deploying an object which rotates about a first axis prior to capture comprising:

an adaptor and an end effector,

said adaptor comprising;

(a) an adaptor housing having an adaptor axis, said adaptor housing being adapted to be mounted on said object with its adaptor axis aligned with said first axis,

(b) a passive turntable mounted on and carried by said adaptor housing, said passive turntable being free to rotate about said adaptor axis independently of said adaptor housing,

said end effector comprising,

(a) clamping means adapted to be movable between a capture/deploy position and a clamping position with respect to said passive turntable to receive and release said turntable when in the capture/deploy position and to prevent rotation of the turntable when in said clamping position,

(b) means for driving said clamping means between said capture/deploy position and said clamping position,

(c) brake means carried by said clamping means for applying a brake torque to said adaptor housing when said turntable is secured by said clamping means,

(d) spin-up drive means carried by said clamping means and adapted to engage said housing to cause the housing to be rotatably driven about said adaptor axis prior to deploying of said object in use.

4,395,007

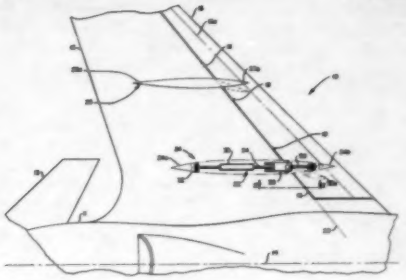
ACTUATION SYSTEM FOR A CONTROL SURFACE OF AN AIRCRAFT

George A. Owl, Jr., Gardena, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Nov. 13, 1980, Ser. No. 206,597

Int. Cl.³ B64C *3/50*

U.S. Cl. 244—215 **5 Claims**



1. An actuation system for positioning a control surface mounted on an aircraft airfoil, said control surface being rotatable about a first axis at an acute angle to the longitudinal axis of said aircraft, comprising:

a first crank having a first end and a second end, said second end being pivotally mounted to said airfoil, said first crank being rotatable about a second axis substantially perpendicular to said longitudinal axis;

a second crank having a first end pivotally mounted to said first crank rotatable about a third axis substantially perpendicular to said second axis, said second crank having a second end pivotally mounted to said control surface rotatable about a fourth axis substantially perpendicular to said second and third axes; and

an actuator coupled to said airfoil and to said first end of said first crank,

such that upon extension or retraction of said actuator in a direction parallel to said longitudinal axis of said aircraft said control surface is rotated by rotation of said first and second cranks, said first and second cranks rotating relative to each other to compensate for the relative change of position of said control surface relative to said longitudinal axis of said aircraft.

4,395,008

AIRCRAFT WING AND FLAP ARRANGEMENT

Barry Sharrock, and David P. Halliday, both of Preston, England, assignors to British Aerospace Public Limited Company, London, England

Filed Jan. 14, 1981, Ser. No. 224,959

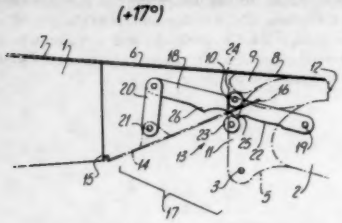
Claims priority, application United Kingdom, Jan. 22, 1980, 8002176

Int. Cl.³ B64C *3/50, 9/16*

U.S. Cl. 244—215 **8 Claims**

1. A wing and flap arrangement including a fixed wing portion, a flap member extending rearwardly of the fixed wing portion, a variable camber upper surface member in the form of a cantilevered leaf spring, said upper surface member being anchored to said fixed wing portion such that it trails therefrom and is biassed toward said flap member at all times, a pivot pivoting said flap member to said fixed wing portion about a generally spanwise axis, actuation means adapted to effect deflection of said flap member about its pivot, and upper surface urging means for urging said upper surface member from said flap member against the bias of the leaf spring when a slot is required, said upper surface urging means including a cam track and cam track engaging member, one of which is

carried by said upper surface member and the other is carried by said flap member and arranged so that on relatively small upward and downward deflection from a neutral position, said upper surface member and the upper surfaces of said fixed



wing portion and said flap member together define a substantially continuous surface, whilst on relatively large downward deflection from the neutral position said cam track and cam track engaging member co-operate to urge said upper surface member from said flap member.

4,395,009

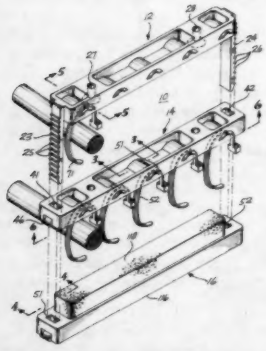
RACEWAY CLAMP

Odo S. Bormke, Gig Harbor, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed May 28, 1981, Ser. No. 267,953

Int. Cl.³ F16L *3/22*

U.S. Cl. 248—68 CB **1 Claim**



1. A raceway clamp assembly comprising:

a three-part clamp for retaining an array of wire bundles a predetermined distance spaced individually one from another, said three-part clamp including a U-shaped base member having serrated side arms for retaining in snap fit relationship an intermediate wire bundle supporting element, and a cushioned third element in pressure fit relationship with said intermediate wire bundle supporting element within said raceway clamp assembly;

said third element having an aperture, said aperture having an inner facing surface portion with complementary serration for interlocking with said serrated side arms;

said U-shaped base member having a bottom portion, and said bottom portion including a plurality of mounting holes for securing said raceway clamp assembly to aircraft structure;

said serrated side arms being resiliently movable towward and away from each other, said serrated side arms being substantially parallel, and said serrated side arms having exterior surface serrations facing downward toward said bottom portion;

said intermediate wire bundle supporting element having an aperture, said aperture having an inner facing surface portion with complementary serration for interlocking with said serrated side arms; and

each of said apertures of said third element and said intermediate wire bundle supporting element having associated respectively therewith a finger tab for releasing respectively said third element and said intermediate wire bundle supporting element, thereby permitting adjustment respectively of said third element and said intermediate wire bundle supporting element along the length of said serrated side arms.

4,395,010

DEVICE FOR THE SETTING UP OF A DATA DISPLAY DEVICE ON A WORK SURFACE

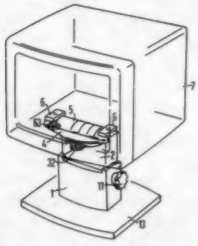
Olav Helgeland, Nittedal; Guttorm Rudi, Fjellhamer, and Odd Engely, Faren, all of Norway, assignors to Tandberg Data A/S, Oslo, Norway

Filed Apr. 13, 1981, Ser. No. 253,368

Claims priority, application Fed. Rep. of Germany, Sep. 30, 1980, 3036852

Int. Cl.³ A47G *29/00*

U.S. Cl. 248—371 **6 Claims**



1. A system for setting up a data display device on a work surface, comprising: an elevation adjustment means; rotation means for rotation of the device about a vertical axis; swivel means for swivelling or tilting the device about a horizontal axis; a weight balancing means for compensating at least a portion of a weight of the data display device; a stand having a stationary telescope member and an extendable telescope member in cooperation therewith; a base plate arranged on the extendable telescope member which receives a rotary plate in rotary fashion; said swivel means comprising the rotary plate provided with an arch, and at least two sliding elements arranged on the arch for bearing the data display device; said weight balancing means comprising a substantially linear energy storage member arranged on the stand; said elevation adjustment means comprising a toothed rack arranged on the extendable telescope member and a pinion which engages in the toothed rack, said pinion being arranged on a shaft which is provided with a first control knob located on the stationary telescope member; the base plate having a passage for the linear energy storage member and at least two concentrically arranged base plate guide slot means for guiding rotation of the rotary plate; two rotary plate guide slot means corresponding to the two sliding elements of the swivel means which run in a direction of the arch for guiding the sliding elements; said swivel means comprising two outside supports or abutment members lying opposite the sliding elements at the rotary plate guide slot means, and first connection element means aligned through the rotary plate guide slot and which holds the sliding elements and the outside abutment members in a releasable connection; second connection element means passing through said base plate guide slot means and which hold the rotary plate to the base plate in a releasable slidable connection to permit rotation of the rotary plate relative to the base plate;

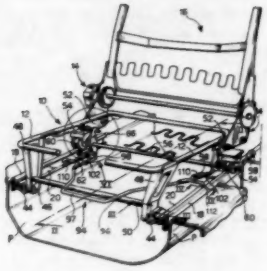
and said second connection element means including a screw with a nut designed as a control knob.

4,395,011

MOUNTING AND GUIDING DEVICE FOR ADJUSTABLE MOTOR VEHICLE SEATS

Mario Torta, Turin, Italy, assignor to Lifel di Torta E C. S.A.S., Beinasco, Italy

Filed Nov. 26, 1980, Ser. No. 210,709
Int. Cl.³ A45D *19/04*; B60N *1/02*
U.S. Cl. 248—393 **13 Claims**



1. In an adjustable motor vehicle seat having a base frame with two side members, a mounting and guiding device of the type comprising:

a pair of fixed guides formed by profiled sheet metal elements having means of attachment to lower internal wall parts of the vehicle so as to extend substantially horizontally and parallel to each other longitudinally of said vehicle;

a pair of movable guides which are formed by profiled sheet metal elements slidably connected to respective said fixed guides;

respective support means which connect said movable guides with respective said side members of said base frame, which overlie said guides;

at least one longitudinal rack fixed to a respective said fixed guide and defining a longitudinal array of positioning slots, and

a respective hand-operated movable latch which is selectively engageable and disengagable with the slots of said rack, and is carried on the movable guide corresponding to said fixed guide having said rack,

wherein the improvement consists in:

each fixed guide comprising a box-section which defines a longitudinal slot facing inwardly of said device, and a side wall facing outwardly of said device for fixing said guide to a vertical part of said lower internal wall part of said vehicle;

each movable guide comprising a guide part which is slidable within said fixed guide, and a lateral part which projects inwardly of said device through said slot and carries said support means;

each rack comprising a strip of sheet metal fixed centrally to said side wall of said fixed guide so that a part of said rack projects from said slot in said guide, said positioning slots being formed in said projecting part,

said projecting lateral part of each movable guide associated with said rack comprising a pair of walls which are spaced above one another and between which is interposed said projecting part of said rack, said projecting lateral part of said movable guide defining an opening in which said latch is slidable,

said support means comprising, for each movable guide, an articulation bracket fixed to said projecting lateral part adjacent the front end of said movable guide, and an upright which is articulated at its lower end to said bracket and is fixed at its upper end to the front of a respective said side member of said base frame, said two uprights being pivoted about a common horizontal transverse axis to permit the seat to tip forwards, and

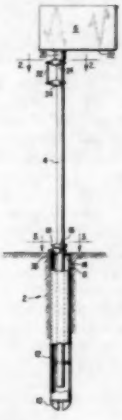
said support means further comprising, in correspondence with each fixed guide, a fork mounted at the rear of said side member of said base frame, and a roller which is rotatably mounted in said fork to rest on an upper edge of said fixed guide which serves as a track.

4,395,012

SUPPORT FOR A MAILBOX

Frederick K. Rance, 402 14th St., Rte. 1, Devils Lake, N. Dak. 58301

Filed Nov. 20, 1981, Ser. No. 323,341
Int. Cl.³ F16M *13/00*
U.S. Cl. 248—545 **6 Claims**



3. A support comprising:

a first cylindrical element,

two annular washers, each attached to said first cylindrical element and each having a central hole aligned with an axis generally parallel with the axis of said cylindrical element,

support means for supporting an object and adapted to be held by said two annular washers,

a locking collar adapted to be secured to said support means, for preventing relative motion, past a predetermined point, between said support means and said first cylindrical element and,

means for attaching an object to said support means;

wherein said support means comprises a second cylindrical element having threads on one end, and said means for attaching an object to said support means comprises:

a plate for supporting said object,

a threaded cylindrical element, secured at one end to said plate, for mating with said threaded portion of said support means,

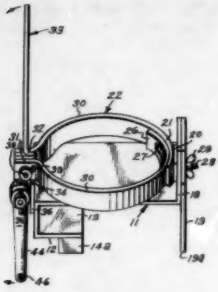
means attached to said threaded element, for frictionally grasping said support means,

elastic means connected between said threaded cylindrical element and said support means for returning said plate to a predetermined orientation with respect to said support pipe after rotational displacement of said plate.

4,395,013
LANTERN HOLDER

Lawrence H. Wissinger, 337 Montgomery Ave., Springfield, Ohio 45506

Filed Feb. 23, 1981, Ser. No. 237,002
Int. Cl.³ F16M 13/00; A47K 1/08
U.S. Cl. 248—558 2 Claims

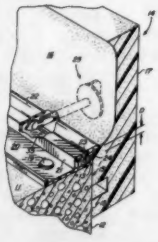


1. A lantern holder, comprising, in combination, a base, a split-clamp ring secured to said base for clamping onto the outer periphery of a lantern base, an upright member secured to said split-clamp ring, for removably supporting an elevatable light reflector and shade combination, and a clamp screw received in said base for clamping said base to an object, such as a seat or ladder top, said base is open, on one end, to receive the longitudinal side edge of a seat, and a lip formed and extending downwards from said open end, includes a pair of spaced-apart legs fixedly secured thereto, and said legs, said lip, and a plate secured to the opposite end of said base, forms surface rest means, for said base, when said base is not clamped to an object, and said split-clamp ring comprises two arcuately curved valves, one pair of ends including an elongated horizontal slot for freely receiving a bolt fastener, which is received through a spacer, said opposite end of said base and said plate, which is elevated when said holder is to be mounted to the top of a ladder.

4,395,014
POOL DECK FORM FOR VINYL LINER SWIMMING POOL

Max W. Deason, 1818 W. Price St., Tucson, Ariz. 85705

Filed Nov. 17, 1981, Ser. No. 322,394
Int. Cl.³ E04B 1/16
U.S. Cl. 249—9 6 Claims



1. An apparatus for forming a deck and coping thereof for a pool, said apparatus comprising,

(a) a liner retainer strip having a channel extending along the length thereof contoured and dimensioned to receive the peripheral edge of a pool liner of flexible, waterproof material, said channel including

a first elongate generally horizontally oriented inner surface extending along said liner retainer,

a second elongate generally horizontally oriented inner surface extending along said liner retainer and generally parallel to said first elongate inner surface,

a lip extending outwardly from said first elongate inner surface toward said second inner surface,

the space between said lip and said second elongate inner surface representing a longitudinal channel opening facing said central area of said pool and extending along said liner retainer generally parallel to said pool wall,

the vertical distance between said lip and said second inner surface generally being constant along the length of said retainer strip and being less than the vertical distance from said first inner surface to said second inner surface,

(b) a continuous strip of semirigid material including

(i) a facing surface free of adhesive and positioned below and horizontal edge against said upper portion of said pool wall,

(ii) a front form surface extending upwardly from said facing surface to form a contoured surface for temporarily supporting concrete poured above said horizontal edge onto said horizontal support surface of said pool, said concrete forming a pool deck and coping thereof contiguous to said pool wall when set, and

(iii) a back wall surface generally opposed to said front form surface and facing said central area of said pool, and

(c) an elongate support member having

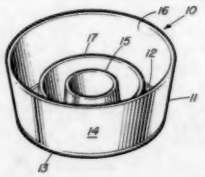
(i) a first end shaped and contoured to pass through said strip of semirigid material and be fixedly detachably secured in said liner retainer, and

(ii) a second end provided with a head having an inner surface contoured to contact said back wall surface of said continuous semirigid strip and to hold said continuous semirigid strip in position against said upper portion of said pool wall when said first end is fixedly secured in said liner retainer, said elongate member being under tension along at least a portion of the length thereof when said first end is secured in said liner retainer channel and said head is contacting said back wall surface of said semirigid strip of material.

4,395,015
CAKE MOLD

Margaret Reardon, 8 Kimball St., Worcester, Mass. 01605

Filed Dec. 21, 1981, Ser. No. 332,848
Int. Cl.³ B28D 7/36
U.S. Cl. 249—115 3 Claims



1. Cake mold, comprising:

(a) a main container having a bottom wall with a circular peripheral edge and having an annular side wall extending upwardly and outwardly from the said peripheral edge of the bottom wall to define a primary top opening, and

(b) an annular division wall extending upwardly from the bottom wall coaxially of the side wall and terminating in a free top edge to define a secondary top opening, the division wall being tapered inwardly and upwardly from

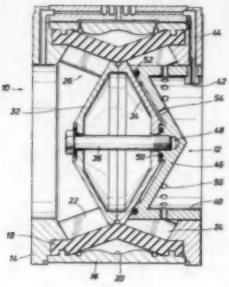
the bottom wall and having a height which is substantially less than that of the side wall.

4,395,016

AXIAL FLOW REGULATOR IMPROVEMENTS INCLUDING RESTRICTOR

Robert H. Welker, Sugar Land, Tex., assignor to Welker Engineering Company, Sugar Land, Tex.

Filed Apr. 6, 1981, Ser. No. 251,206
Int. Cl.³ F16K *7/07, 47/14*
U.S. Cl. 251—5 **4 Claims**



1. An apparatus including a restrictor for installation on the downstream side of an axial flow regulator which flow regulator includes a central plug diverting fluid flow into an annular space thereabout, said regulator having an annular housing having inlet and outlet body elements received therein, said body elements each defining a plurality of integral spaced ribs forming opposed cage elements for retention of said central plug therebetween, said body elements defining cylindrical inlet and outlet openings, locking opening means being defined in the downstream one of said body elements, the restrictor comprising:

a surrounding cylindrical sleeve defining a solid circumferential wall forming a close fit within said outlet opening of said downstream body element a plurality of fluid flow openings being formed in said cylindrical wall to thereby define a maximum throughput capacity, said restrictor further including a generally conical central closure member being integral with said cylindrical wall and extending across and within said cylindrical wall to close off an axial flow path there through an annular seal groove being formed in the outer peripheral portion of said restrictor and opening toward said plug, seal means received in said seal groove and establishing a seal between said restrictor and plug, locking means extending through said cylindrical wall and into said locking opening and securing said restrictor in assembly with said downstream body element.

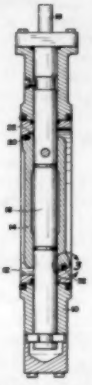
4,395,017

BUTTERFLY VALVE SEALING MEANS HAVING AN IMPROVED O-RING GROOVE

Richard A. Brautigan, Tulsa, Okla., assignor to Dover Corporation, Tulsa, Okla.

Continuation of Ser. No. 124,538, Feb. 25, 1980, abandoned. This application Dec. 21, 1981, Ser. No. 332,959
Int. Cl.³ F16J *15/32;* **F16K** *1/226*
U.S. Cl. 251—306 **1 Claim**

1. In a butterfly valve having a body with an internal circumferential sealing surface and a disc rotatably supported in the valve body, the disc having a circumferential sealing surface therearound, the disc being rotatable so that when the valve is in the closed condition the disc sealing surface is adjacent to or in physical contact with the body sealing surface, the improvement comprising a groove formed in the valve disc sealing surface, the groove in cross section having an outer portion communicating with the disc sealing surface and an inner portion, the groove outer portion having paralleled sidewalls in said cross section, the inner portion being also defined in part by paralleled sidewalls in said cross section, the width of the inner portion between its sidewalls being at least 140% of the width of the outer portion between its sidewalls, the cross-sectional area of the inner portion in said cross section being at least 140% of the cross-sectional area of the



groove outer portion in said cross section, the juncture of the inner and outer portions in said cross section providing opposed ledge surfaces in a common plane; and

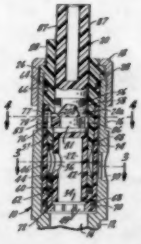
an O-ring gasket received in said groove, the cross-sectional area of the total of the groove inner and outer portions being about 105% of the cross-sectional area of the O-ring gasket, the O-ring gasket when in position in the groove normally extending slightly beyond the disc sealing surface to compressibly engage the valve body sealing surface when the valve is in the closed condition.

4,395,018

VALVE MEMBER WITH FIXED SEAL SHUTOFF

Alfred M. Moen, Grafton, Ohio, assignor to Stanadyne, Inc., Windsor, Conn.

Continuation of Ser. No. 173,490, Jul. 30, 1980, abandoned, which is a continuation-in-part of Ser. No. 925,538, Jul. 19, 1978, abandoned, which is a continuation-in-part of Ser. No. 871,178, Jan. 23, 1978, abandoned. This application Feb. 16, 1982, Ser. No. 348,997
Int. Cl.³ F16K *5/04*
U.S. Cl. 251—310 **29 Claims**



1. Fluid valve means including sleeve means, inlet and outlet port means in said sleeve means, a stem movable within said sleeve means between open and closed positions and having

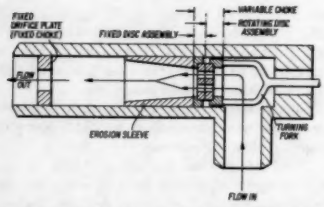
inlet and outlet port means, said stem inlet port means being in communication with said sleeve means inlet port means, said stem outlet port means being movable into register with said sleeve means outlet port means to thereby define a path of flow through said valve means from said communicating stem and sleeve means inlet port means through said stem outlet port means and said sleeve means outlet port means, and a fixed seal member carried by said sleeve means and for closing flow between said said sleeve means inlet and outlet port means, said seal member being annular, at least in part, with the annulus being arranged about an axis perpendicular to the axis of said stem, said seal member being spaced from said sleeve means outlet port means with said path of flow through said valve means never being through said seal member at any position of said stem to thereby protect said seal member from movement and wear caused by dynamic water pressure and foreign matter within the water, said stem outlet port means being in register with and closed by said seal member when said stem is in a closed position.

4,395,019

SEAL FOR WEAR RESISTANT INSERTS

Raymond C. Searles, Russell, Ky., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 24, 1981, Ser. No. 257,049
Int. Cl.³ F16K *3/02*
U.S. Cl. 251—357 **13 Claims**



1. In a pressure let-down valve comprising a valve body and a variable choke within said body, said variable choke comprising a fixed disc assembly and a rotating disc assembly, said rotating disc assembly comprising a retaining ring and a wear-resistant insert means affixed to said retaining ring,

an improvement wherein:

said wear-resistant insert means is attached to said retaining ring by a split locking ring means containing a fastening means in the front surface thereof.

4,395,020

STRUT COMPRESSOR

Phillip A. Spainhour, Waukegan, Ill., assignor to Ammco Tools, Inc., North Chicago, Ill.

Filed Mar. 15, 1982, Ser. No. 358,204
Int. Cl.³ B23P *19/04*
U.S. Cl. 254—10.5 **7 Claims**

1. Apparatus for use in assembling and disassembling a strut assembly of the type having a shock absorber axially disposed within a coil spring, comprising in combination

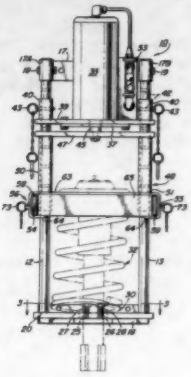
a plurality of mutually parallel support rails,

first platen means mounted at a fixed position on said support rails for operatively engaging one end of a coil spring disposed between said rails in substantial parallelism therewith,

second platen means mounted for movement along said rails for engaging the other end of said coil spring, and

means for applying a force to said second platen means to move said second platen means toward said first platen means to compress said coil spring between said first and second platens,

said second platen means comprising first and second pivot members freely pivotable about an axis extending transversely to the longitudinal axes of said rails, and front and



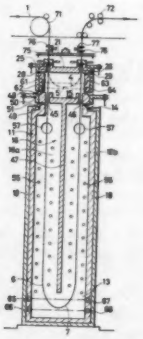
rear spring engaging slides adjustably mounted to said pivot members and extending therebetween for engaging said other end of said coil spring.

4,395,021

VERTICAL CONTINUOUS ANNEALING FURNACE AND ITS OPERATING METHOD

Ryoji Terakado; Masaru Iwasa; Ituo Takahashi; Norio Anzawa, and Gen Yoshida, all of Muroran, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Feb. 8, 1982, Ser. No. 347,235
Int. Cl.³ C21D *9/56*
U.S. Cl. 266—85 **15 Claims**



1. A vertical continuous annealing furnace, comprising:

a furnace proper having a furnace mouth opening upward in the top thereof, for admitting a steel strip into the furnace, the strip forming a catenary-like loop therein;

a first furnace cover horizontally mounted on the top of the furnace proper so as to close said furnace mouth, the first furnace cover being laterally slidable with respect to the furnace proper so as to open and close the furnace mouth and having two long narrow openings laterally extending from one side to the other thereof and longitudinally spaced so that the descending and ascending portions of the strip can pass therethrough; and

a second furnace cover horizontally spaced below said first furnace cover so as to divide the furnace proper into an upper pre-chamber and a lower heating chamber, the

second furnace cover being laterally slidable so as to permit the two chambers to be cut off and connected as required, having two long narrow openings laterally extending from one side to the other thereof and longitudinally spaced so that the descending and ascending portions of the strip can pass therethrough, the second furnace cover also having a partition extending from the undersurface thereof to near the bottom of the furnace to vertically divide the heating chamber into a heating zone and a soaking zone.

4,395,022

METHOD OF AND APPARATUS FOR CONTROLLED COOLING OF METALLURGICAL PRODUCTS

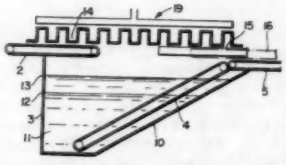
Philippe A. Paulus, and Marios Economopoulos, both of Liege, Belgium, assignors to Centre de Recherches Metallurgiques-Centum voor Research in de Metallurgie, Brussels, Belgium

Filed Feb. 2, 1978, Ser. No. 874,629

Claims priority, application Belgium, Feb. 8, 1977, 851213; Apr. 29, 1977, 854158; May 10, 1977, 854478

Int. Cl.³ C21D *9/56*

U.S. Cl. 266—106 **4 Claims**



1. An installation for controlled cooling of a metallurgical product, comprising, a vessel for holding a liquid bath, a device for continuously transferring the product to said vessel, a cover arranged above the vessel, said cover being provided with a condenser for recovering vapour from the bath, means for continuously raising the product from the vessel, and means for keeping a substantially homogeneous temperature throughout the bath, in which the cover of the vessel comprises:

(a) a first portion formed by a corrugated condenser of the contact type, arranged above the vessel and extending from its inlet side to at least a point where the conveyor or the product emerges from the path; and

(b) a second portion which is of a heat-insulating nature and extends from the said point at least to the outlet of the vessel.

4,395,023

SHROUD FOR STEEL MAKING ELECTRIC-ARC FURNACE

Fumio Tomizawa; Katsutoshi Sobata, both of Yokohama; Yoshiaki Yoshimatsu, Kure; Sadayuki Saito, Yotsukaido; Takashi Otani, and Senzaburo Hirano, both of Chiba, all of Japan, assignors to Ishikawajima-Harima Jukogyo Kabushiki Kaisha and Kawasaki Seitetsu Kabushiki Kaisha, both of, Japan

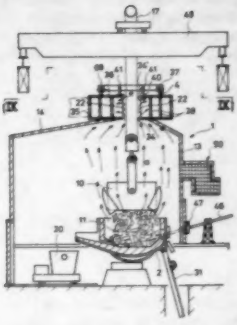
Filed Jun. 14, 1982, Ser. No. 388,154

Claims priority, application Japan, Sep. 22, 1981, 56-149808; Sep. 22, 1981, 56-149809

Int. Cl.³ H05B *7/20*

U.S. Cl. 266—158 **6 Claims**

1. In a shroud for a steel making electric-arc furnace comprising insulating and dust proofing walls surrounding sides and a top of a steel making electric-arc furnace main body, and doors provided in a side wall of said sound insulating and dust proofing walls to allow a scrap bucket which is suspended to pass through from the side; the improvement which comprises an opening provided in the top wall of said sound insulating and dust proofing walls, a dust collecting suction duct on the top wall covering said opening and having an opening therein in registry with the opening in the top wall, said openings being of a minimum width enough for a suspending device of said scrap bucket to move transversely to the center of said electric-arc furnace main body, said suction duct having its



suction port in communication with said openings of minimum width, and a movable top door provided over said dust collecting suction duct and adapted to open or close said openings of minimum width.

4,395,024

APPARATUS FOR HARDENING METALLIC WORKPIECES INCLUDING FURNACE AND WORKPIECE TRANSPORT STRUCTURE, A PART OF WHICH CAN REMAIN IN THE FURNACE DURING FURNACE OPERATION

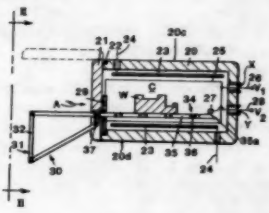
Wolfgang Rembges, Cologne, and Jan G. Elwart, Erftstadt, both of Fed. Rep. of Germany, assignors to Klöckner Ionon GmbH, Leverkusen, Fed. Rep. of Germany

Filed Jan. 8, 1982, Ser. No. 338,058

Claims priority, application Fed. Rep. of Germany, Jan. 17, 1981, 3101351

Int. Cl.³ C23C *11/10*

U.S. Cl. 266—252 **17 Claims**



1. An apparatus for the treatment of a workpiece which comprises:

a furnace, said furnace including a hollow body having an open end and defining a treatment chamber therein, a door pivotally connected to said hollow body to open or close the open end thereof, upper and lower heating means located within said treatment chamber, two electrodes located within said treatment chamber between said upper and lower heating means, one of said electrodes being in the form of a cup-shaped Faraday cage whose open end faces the open end of said hollow body, and two electrical lines, each of said electrical lines being attached at one of its ends to a respective electrode and then extending through an electrically insulated opening in said hollow body so as to be connected to a voltage source located outside of said hollow body, each

said electrical line being electrically insulated from all other elements of the furnace, and

a transport structure, said transport structure being movable with respect to said furnace and including a metallic mounting portion and a metallic platform portion, said platform portion being electrically insulated from said mounting portion, and said transport sturcture being constructed such that said mounting portion is located outside of said hollow body when said transport structure is moved with respect to said furnace such that said platform portion, which at least initially supports the metallic workpiece to be treated, is operatively positioned within said treatment chamber and the door of said furnace is pivoted to close the open end of said furnace.

4,395,025

METHOD AND APPARATUS FOR THE CONTINUOUS FURNACE BRAZING AND GAS SOFT-NITRIDING TREATMENTS OF IRON ARTICLES

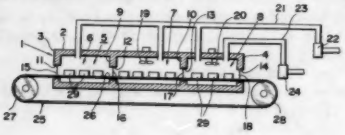
Teruoki Watanabe; Tadao Kanno; Akio Hidaka, all of Kawagoe, and Shunji Kobayashi, Sayama, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 113,649, Jan. 21, 1980, abandoned, which is a division of Ser. No. 56,922, Jul. 12, 1979, abandoned. This application Sep. 24, 1981, Ser. No. 305,341

Claims priority, application Japan, Jul. 12, 1978, 53-84680; Jul. 13, 1978, 53-85384

Int. Cl.³ C21D *1/06*

U.S. Cl. 266—257 **5 Claims**



1. A continuous treatment furnace for brazing and gas soft-nitriding iron parts, comprising:

a furnace body including:

a brazing chamber for brazing said iron parts in a protecting atmosphere substantially comprising a controlled gas for brazing;

a furnace cooling chamber, provided subsequent to said brazing chamber, for gradually cooling said iron parts in a protecting atmosphere substantially comprising said controlled gas; and

a gas soft-nitriding chamber, provided subsequent to said furnace cooling chamber, for gas soft-nitriding said iron parts in a gas soft-nitriding atmosphere substantially comprising said controlled gas and an ammonia gas;

a protecting gas supply line branched to feed said controlled gas to said brazing chamber, said furnace cooling chamber, and said gas soft-nitriding chamber;

an ammonia gas supply line connected to feed said ammonia gas to said gas soft-nitriding chamber;

said chambers being provided with partition walls therebetween;

each said partition wall being provided with an opening therein to permit communication between said chambers; and

a shielding steel curtain being disposed so as to cover each said opening while permitting said iron parts to be passed therethrough.

4,395,026

REFRACTORY GAS-PERMEABLE STRUCTURAL UNIT

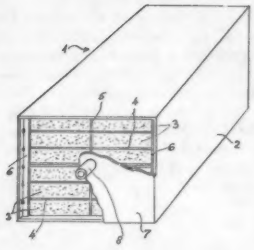
Fritz Hödl, Vienna, and Friedrich Kassegger, Wiener Neustadt, both of Austria, assignors to Arbed S.A., Luxembourg, Luxembourg

Filed Jun. 25, 1981, Ser. No. 277,218

Claims priority, application Luxembourg, Jun. 25, 1980, 82552; Jun. 25, 1980, 82553; Jun. 25, 1980, 82554

Int. Cl.³ C21B *7/16*

U.S. Cl. 266—265 **26 Claims**



1. A refractory gas-permeable structural unit for blowing a gas into a metal treatment vessel and through its casing, characterized by a passageway formed by faces of at least two elongated refractory elements, said elements being separated from one another by a thin metal layer so that gas passage takes place between said elements along said metallic layer, said elements each having first and second longitudinal faces and hot and cold end faces, said metallic layer being arranged on the first longitudinal face of at least one of said elements; a metal housing surrounding said elements to connect them with one another and sealingly abutting against said second longitudinal faces of said elements; and means for supplying gas and including a gas distribution chamber formed at said first end faces of said elements and a conduit communicating with said distribution chamber.

4,395,027

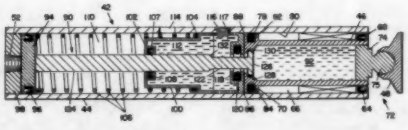
PRESSURE INTENSIFYING DEVICE

Robert A. Nordmeyer, 5034 Marmol Dr., Woodland Hills, Calif. 91364

Filed Sep. 15, 1980, Ser. No. 187,588

Int. Cl.³ B23Q *3/08*

U.S. Cl. 269—25 **8 Claims**



1. A two stage hydraulic pressure device comprising:

a housing cylinder having a telescoping inner cylinder disposed concentrically therein and movable between a retracted position and extended workpiece contact positions, said telescoping cylinder including an outer solid workpiece contact end and an inner sealing end, said sealing end including means for sealing said telescoping cylinder to said housing cylinder during movement between said extended and retracted positions;

a drive rod concentrically located within said cylinder housing, for applying power to said telescoping cylinder, said drive rod having a body portion, a narrower neck portion and an enlarged head fixed to said neckwork, said head having a larger cross-sectional area than said rod body;

means for sealing said drive rod body to said cylinder housing and means for introducing hydraulic fluid into the telescoping cylinder and fluid reservoir chamber defined by the interior of said housing cylinder between said telescoping cylinder seal means and said drive rod seal means;

means on the inner surface of the telescoping cylinder sealing end for engaging said drive rod head to prevent movement of said drive rod head rearward out of said telescoping cylinder, said engaging means including partial seal means on the inner surface of said telescoping cylinder sealing end for partially sealing said drive rod head to said telescoping cylinder when said head is at said sealing end whereby as said head is forced against hydraulic fluid in said telescoping cylinder, said telescoping cylinder is extended until it meets sufficient resistance force to cause hydraulic fluid to bleed past said head through said partial seal as said head is moved forward and said telescoping cylinder remains stationary;

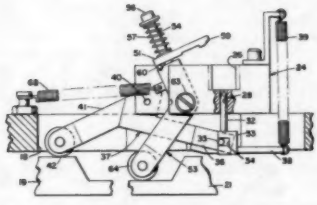
and additional drive rod body seal means for sealing the drive rod body to the cylinder housing, said additional sealing means encompassing said drive rod neck when said drive rod is retracted, whereby forward movement of said drive rod body causes sealing contact with said additional seal whereupon more pressure is applied to said telescoping cylinder as said drive body rod is forced into said telescoping cylinder.

4,395,028

WORKPIECE POSITIONING, CLAMPING AND CONVEYING APPARATUS

William C. Kent, Garland, Tex., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Oct. 26, 1981, Ser. No. 314,941
Int. Cl.³ B23Q *1/00*
U.S. Cl. 269—50 **6 Claims**



1. An apparatus for locating and clamping an article, which comprises:

a workholder having a nest formed therein to receive an article with a hole therein;

a locating pin slidably mounted in the workholder for movement into the nest and into the hole formed in the article;

a clamp for engaging the article positioned in said nest;

a first lever means having a first cam follower mounted on one end thereof and means mounted on the other end for moving said slidable pin into the nest and in the hole formed in the article positioned in said nest to accurately locate the article in the nest;

a second lever means having a second cam follower mounted on one end and means mounted on the other end for pivotally mounting said clamp;

spring means for urging said clamp against said other end of said second lever; and

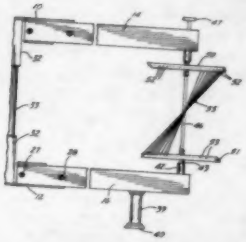
cam track means for sequentially engaging said first and second cam followers to pivot said first and second lever means to sequentially move said locating pin into the hole formed in the article positioned in said nest, and to pivot said clamp to engage the article positioned by said locating pin.

4,395,029

FIXTURE FOR MANUFACTURING RATTAN TYPE FURNITURE

Denny G. Davis, Littleton; Robert C. Emerson, Aurora, and George J. Banks, Jr., Littleton, all of Colo., assignors to Almar Products Corporation, Calif.

Filed Dec. 11, 1980, Ser. No. 215,253
Int. Cl.³ B65H *81/00*
U.S. Cl. 269—57 **1 Claim**



1. A rattan type furniture manufacturing assembly comprising:

(a) a pair of interchangeable base members each comprising a flat plate having four angle members secured to one major surface thereof to define four arm holding supports with a square socket member secured to and projecting normally from said one major surface in given orientation with respect to said arm holding supports,

(b) eight interchangeable arm means in the form of square cross-section tubes each removably secured in a different one of said arm holding supports of said two base members with the four arm means secured to each of said base members extending outwardly thereof at right angles to each other,

(c) a square central shaft having each of its ends releasably received with a close fit in a different one of said square socket members of said pair of base members for supporting said base members apart with said arm means of one of said base members in alignment with said arm means of the other of said base members,

(d) four torque rods each rotably received through bores in a different aligned pair of said arm means at the free end thereof,

(e) a plurality of hollow tubular disc holding means each receiving a different one of said torque rods and being releasably secured thereto, and

(f) adjustable foot means mounted on each of said arm means of one of said base members at the free end thereof and projecting axially outward of said assembly, whereby said assembly may be supported on said foot means when associated with either one of said base members with said central shaft and said torque rods extending vertically.

4,395,030

QUICK ACTION VISE

Frank G. Eskuchen, Coral Gables, Fla., assignor to Leonard G. Eskuchen; Raymond F. Eskuchen and Wayne R. Lindholm, all of Palatine, Ill.

Filed Feb. 2, 1982, Ser. No. 345,196
Int. Cl.³ B23Q *3/02*
U.S. Cl. 269—181 **6 Claims**

1. A quick action vise comprising:

a base defining a longitudinal axis and including a generally upstanding portion;

a first clamping jaw fixedly secured to said base in spaced relation to said upstanding portion;

a second clamping jaw;

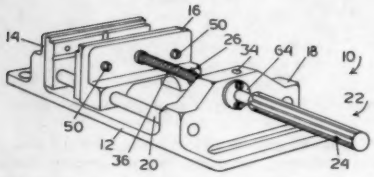
means cooperative with said base for supporting said second clamping jaw for movement along a predetermined path

relative to said first clamping jaw between a position spaced therefrom and a position cooperative with said first clamping jaw to facilitate support of a work piece therebetween;

said generally upstanding portion of said base having a first bore therethrough the axis of which is substantially parallel to said predetermined path, and having a second bore therein transverse to and intersecting said first bore:

a control rod extending through said first bore and being rotatable relative to said base, said control rod being operatively connected to said second clamping jaw so as to effect movement of said second clamping jaw relative to said first clamping jaw upon longitudinal movement of said control rod;

a clutch member disposed within said second bore and longitudinally moveable therein to a first position engaging said control rod so as to effect positive longitudinal movement



of said control rod in a first direction relative to said base upon rotation of said control rod in a first rotational direction, said clutch member being movable to a second position in response to rotation of said control rod in an opposite rotational direction such that said clutch member enables longitudinal movement of said control rod in a direction opposite to said first longitudinal direction while maintained in relatively fixed rotational relation to said base; and

a sleeve-like actuator frictionally cooperative with said control rod and operatively associated with said clutch member so as to effect longitudinal movement of said clutch member between its said first and second positions in response to selective rotational movement of said control rod in said first and second rotational directions, movement of said clutch member to its said second position enabling rapid movement of said second jaw relative to said first jaw without rotating said actuator rod.

4,395,031

APPARATUS FOR PRINTING BOOKS OF SIGNATURES AND METHOD FOR SAME

Damie C. Gruber, St. Paul, and Bernard J. Robichaud, Roseville, both of Minn., assignors to The Webb Company, St. Paul, Minn.

Filed Sep. 8, 1981, Ser. No. 300,304
Int. Cl.³ B65H *39/02*
U.S. Cl. 270—54 **23 Claims**

1. A signature printing system for collating and printing signatures to form books of signatures having customized information printed on the inside thereof, said books having a plurality of inside pages and two cover pages, said signatures each having two centerfold pages and two outside pages, said signature printing system comprising:

(a) a collating conveyor for receiving said signatures so as to progressively build up books of said signatures, said conveyor conveying said signatures in a downstream direction;

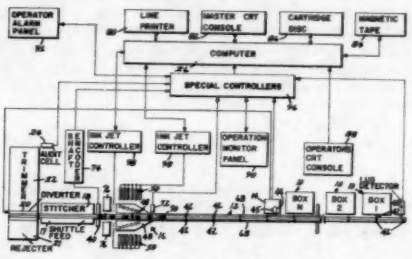
(b) a plurality of feeders at stations spaced longitudinally along said collating conveyor for delivering said signatures to said conveyor in superpositioned relationship;

(c) means located adjacent said conveyor for selecting a signature from one of said feeders, said means extending downstream along said collating conveyor from said one feeder station;

(d) means located adjacent said conveyor downstream of said spaced stations and said selection means and operatively interconnected to said selection means to cooperate with said collating conveyor to move a page of said selected signature out of superpositioned relationship with a signature delivered to the conveyor just prior to the delivery of said selected signature and thereby open each book of signatures at said selected signature to expose an inside page of said book of signatures; and

(e) signature printer means located adjacent said opening means for printing information on an inside page of said book of signatures when opened by said opening means.

18. A signature printing method for collating and printing signatures to form books of signatures having customized information printed on the inside thereof, said books having a plurality of inside pages and two cover pages, said signatures



each having two centerfold pages and two outside pages, comprising the steps of:

(a) delivering said signatures onto a collating conveyor from a plurality of feeders at stations spaced longitudinally along said collating conveyor;

(b) conveying said signatures in a downstream direction past said feeders so as to progressively build up books of said signatures as said signatures are delivered onto said collating conveyor in superpositioned relationship;

(c) selecting a signature from one of said feeders;

(d) moving a page of said selected signature out of superpositioned relationship with a signature delivered to the conveyor just prior to the delivery of said selected signature thereby opening each book of signatures at said selected signature at a location downstream from said spaced stations to expose an inside page of said book of signatures; and

(e) printing information on an inside page of each said book of signatures when opened.

4,395,032

DOCUMENT FEEDER

Richard D. Hipp, Jr., Rushseba Township, Chisago County, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Mar. 9, 1981, Ser. No. 241,765
Int. Cl.³ B65H *5/00*
U.S. Cl. 271—10 **12 Claims**

1. A document feeder for advancing a document along a defined path within an office machine comprising,

frame means for supporting the document,

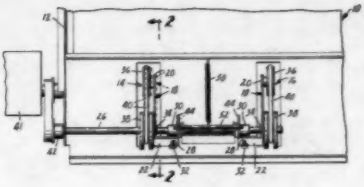
a first document feed member positioned adjacent a first side of the path, and rotatably mounted on said frame means to urge the document along the path,

a second document feed member positioned adjacent a second side of the path, and rotatably mounted on said frame means to urge the document along the path,

lever means individually and pivotally supporting each of said feed members on said frame means, for affording the independent angular adjustment of each of said feed mem-

bers with respect to the adjacent side of the path, so as to align each of the feed members with respect to each other and with respect to the document path, and

means for biasing said feed members into contact with the



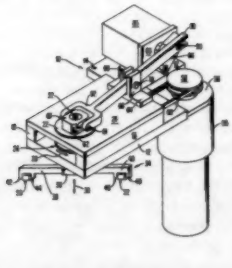
document including a single spring connected between said frame means and both of said lever means so that said spring simultaneously biases each of said feed members into contact with the document with substantially equal force.

4,395,033

SHINGLING WITH CONTROLLED FORCE AND/OR VELOCITY

Donovan M. Janssen; Robert Magno; William S. Seaward, all of Boulder, and James A. Valent, Longmont, all of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 13, 1981, Ser. No. 243,290
Int. Cl.³ B65H *3/06*
U.S. Cl. 271—10 **18 Claims**



7. Device for shingling sheets in seriatim from the top of a stack comprising in combination:

shingling-type sheet separating means operable to contact the topmost sheet of said stack, said separating means being rotatable in a plane generally parallel to the topmost sheet, and including means to apply a force to the topmost sheet at the center of rotation of said separating means;

variable-force generating means associated with sheet separating means and operable to apply a variable force with which said sheet separating means engages said stack;

variable-velocity rotary means operable to rotate said sheet separating means;

sensor means operable to sense a sheet which has been shingled from said stack; and

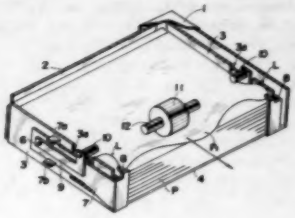
controller means responsive to said sensor means and operable to simultaneously adjust the force applied by the force generating means and the rotational velocity of the separating means.

4,395,034

SHEET FEEDING DEVICE

Kazuyuki Fukui, Toyokawa, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed May 4, 1981, Ser. No. 260,647
Claims priority, application Japan, May 9, 1980, 55-62084
Int. Cl.³ B65H *3/30*
U.S. Cl. 271—21 **15 Claims**



1. A sheet feeding device comprising:

a casette for holding a stack of sheets;

feeding means for longitudinally advancing from the cassette the uppermost sheet of the stack in pressing contact with the sheet at approximately its medial longitudinal axis;

separating pawl members for separating the uppermost sheet from the other sheets by engaging the uppermost sheet at its opposite leading corners; and

pressure means for pressing the uppermost sheet at its opposite side portions and being retractable, at least in part independently of any moement of said pawl members from the pressing position in response to the resilient force of the uppermost sheet when the uppermost sheet is bent by its advance in engagement with the separating pawl members;

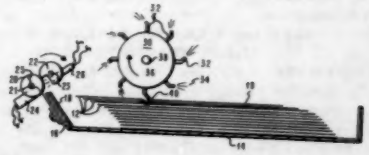
whereby the sheet is properly discharged regardless of the size or thickness or resiliency of the sheet.

4,395,035

AIR SHINGLER

Ronald E. Hunt, Georgetown, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 24, 1980, Ser. No. 219,624
Int. Cl.³ B65H *3/14*
U.S. Cl. 271—97 **8 Claims**



1. A method of separating sheets in a stack for feeding seriatim to an operating station including the steps of:

(1) downwardly directing a fluid jet to the topmost sheet such that the jet includes a force component normal to the topmost sheet; and

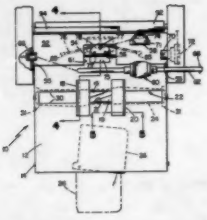
(2) moving the jet in the feed direction whereby uppermost sheets are shingled.

4,395,036

SHEET FEEDER WITH STACK-HOLDING TRAY HAVING FLEXIBLE-BAND-COUPLED GUIDE ELEMENTS

Carl A. Bergman, South Dartmouth; Roy L. Thomas, New Bedford, and Richard A. Bourbeau, North Dartmouth, all of Mass., assignors to Standard Duplicating Machines Corporation, New Bedford, Mass.

Division of Ser. No. 204,559, Nov. 6, 1980, abandoned, which is a continuation of Ser. No. 33,740, Apr. 26, 1979, abandoned.
This application Dec. 7, 1981, Ser. No. 327,779
Int. Cl.³ B65H *1/04*
U.S. Cl. 271—171 5 Claims



1. Apparatus for holding a stack of sheets for entry into a sheet feeder, comprising:

a tray for vetically supporting said stack,

left and right stack guide elements moveable toward and away from the lateral edges of said stack for centering said stack in said tray,

extensions of said stack guide elements that extend below said tray,

a flexible band formed in a loop,

said band being attached at a first location to a first of said extensions and a second location to the second of said extensions, said second location being about halfway around said loop from said first location, such that said stack guide elements move inward and outward laterally in unison,

band guide elements at the lateral edges of and below said tray,

said band guide elements having slot means for vertically restraining said band, and

band-bending means for bending said band during inward movement of said stack guide elements so that when said movement stops the band tends to move said stack guide elements outwardly as it assumes an equilibrium position, thereby preventing overtightening of said stack guide elements against said stack.

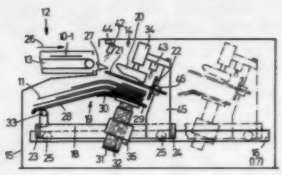
4,395,037

APPARATUS FOR STACKING TEXTILE FABRIC SHEETS ON TOP OF ONE ANOTHER

Rolf Heine, Rinteln, Fed. Rep. of Germany, assignor to Herbert Kannegiesser GmbH & Co., Vlotho, Fed. Rep. of Germany

Filed May 20, 1981, Ser. No. 265,494
Claims priority, application Fed. Rep. of Germany, Jun. 16, 1980, 3022619
Int. Cl.³ B65H *29/70*
U.S. Cl. 271—188 5 Claims

1. Stacking apparatus for stacking sheet-like textile fabrics or the like on top of one another as they exit devices for processing textile fabrics in the manufacture of articles of outer clothing on a feed mechanism (12), which apparatus includes a stacking table (19) mounted to be movable vertically, a movable clamping plate (20) mounted to be pressed towards the stacking table, and a stacking rake (21) disposed between the stacking table and the clamping plate and movable forwards and backwards in the conveying direction of the feed mechanism and onto which the textile fabrics are conveyed by the feed mechanism, in order to be deposited on the stacking table, characterised by: the stacking rake comprising a plurality of laterally spaced and longitudinally oriented prongs (38) and the clamping plate defining, on a clamping side thereof, a plurality of laterally spaced and longitudinally oriented recesses (40) located in a working region of the stacking rake prongs and cooperable therewith to grippingly engage textile fabrics, the width of said recesses corresponding at least to the cross-sectional width of said prongs.

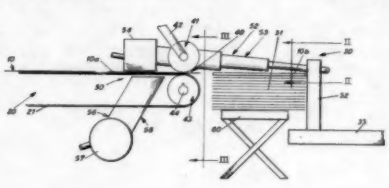


4,395,038

TELESCOPING AIR JETS FOR PILING

Donald C. Fitzpatrick, Chatham, N.Y.; Gerald A. Guild, Dalton, and Arthur T. Karis, Lenox, both of Mass., assignors to Beloit Corporation, Beloit, Wis.

Continuation of Ser. No. 113,722, Jan. 21, 1980, abandoned. This application Sep. 29, 1981, Ser. No. 306,736
Int. Cl.³ B65H *29/24*
U.S. Cl. 271—195 13 Claims



1. A method of handling sheets to be stacked in a pile against a backstop, comprising:

conveying sheets seriatim upstream of said pile in a direction towards said backstop,

continuously issuing pressurized air in a generally downward and lateral direction in the direction of conveyance of said sheets from means mounted directly overlying said pile

directing lift air against the undersurface of each successive sheet at a point upstream of said pile as the sheet is being conveyed toward said pile, and

transporting each successive sheet over said pile into jogging relationship with said backstop and depositing the sheet onto said pile with combined lift and transport forces effected by the pressurized air and lift air.

4,395,039

METHOD OF EXERCISING

Robert T. Kaiser, South Jordan, Utah, assignor to Kaiser-Farmer Development Corp., Utah

Filed May 26, 1981, Ser. No. 267,382
Int. Cl.³ A61H *1/02*; A63B *21/02, 21/32*
U.S. Cl. 272—126 17 Claims

1. A method of exercise specifically adapted for independent, individual use by a patient for rehabilitation of the patient's injured shoulder or arm using the patient's non-injured arm as an actuating force, the method comprising the steps of:

a. grasping with the non-injured arm of the patient, an elongated rigid member, said rigid member having a free end

with an attached exercise gripping means coupled thereto by an elastic connecting means;

b. grasping the exercise gripping means with the hand of the injured arm or shoulder of the same patient while maintaining the injured arm in a relaxed condition;

c. moving the free end of the elongated rigid member with a non-injured arm to rotate the injured arm and shoulder to a comfortable extreme position in preparation for exercise;

d. reciprocating the free end of the rigid member in a desired exercise path to apply gentle tension through the elastic connecting means to reciprocate the patient's injured arm or shoulder; and

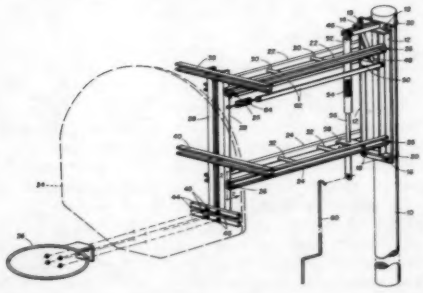
e. repeating steps c and d of the foregoing sequence while gradually increasing the extent of injured arm movement to greater extremities.

4,395,040

ADJUSTABLE BASKETBALL GOAL

David White, 119 S. Main St., Fayette, Iowa 52142

Filed Apr. 12, 1982, Ser. No. 367,441
Int. Cl.³ A63B *63/08*
U.S. Cl. 273—1.5 R **2 Claims**



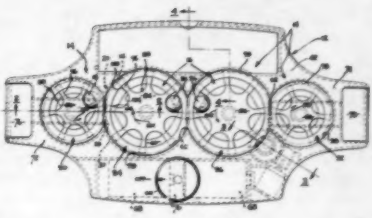
1. An adjustable support for basketball backboards and goals and the like, said support comprising a rear vertical support, a front vertical support spaced forwardly from the rear vertical support, upper and lower horizontal supports pivotally connected to the front and rear supports so as to form a parallelogram arrangement, tightening means extending between the rear vertical support and the front vertical support to maintain the rigidity of the structure as its pivotal connections wear through normal use, a main support arm fixed to the rear vertical support and extending forwardly therefrom, adjustable means having its upper end pivotally connected to the outer end of the main support arm and having its lower portion pivotally connected to the lower horizontal supports so as to provide for raising and lowering of the front vertical supports, backboard mounting means affixed to the front vertical support, and goal mounting means on the lower end of the front vertical support providing for direct fastening to said support of the goal and the backboard.

4,395,041

BALL TRANSFER AND CAPTURE GAME AND METHOD

Adolph E. Goldfarb, 4614 Monarca Dr., Tarzana, Calif. 91356, and Emil H. Von Winckelmann, Van Nuys, Calif., assignors to Adolph E. Goldfarb, Northridge, Calif.

Filed Feb. 11, 1981, Ser. No. 233,463
Int. Cl.³ A63F *7/00*
U.S. Cl. 273—119 A **22 Claims**



1. A competitive multi-player game-playing apparatus, comprising:

a frame means;

a plurality of sets of balls, each set distinctively marked for association with each player;

at least three wheels, mounted in the frame means such that each wheel is adjacent to at least one other wheel and is rotatable about a vertical axis, including at least one wheel associated with each player, and at least one wheel intermediate the player-associated wheels, each wheel including a plurality of peripheral pockets, each proportioned and arranged so as to receive and carry a ball and permit a ball to pass outwardly;

motor means mounted in the frame means for effecting simultaneous rotation of all of said wheels, each at a rate of rotation which generates sufficient centrifugal force such that the balls tend to move out of the pockets, and wherein the rates of rotation of the wheels are syncronized and the respective sizes of the wheels, and the proportions and arrangements of the pockets are designed such that a space is formed between pockets in adjacent rotating wheels through which a ball tend to transfer;

means on the frame means for confining the balls in the pockets in the rotating wheels other than at the transfer spaces, so that a ball will move through a path about the periphery of the rotating wheel between transfer spaces; and

means mounted in the frame means for controlling transfer of balls through at least one transfer space, said control means being operable by each player.

20. A method of moving a plurality of balls unidirectionally along a figure eight route having a first circular path, a second circular path and a junction therebetween, including the steps of:

automatically by use of a motor and continuously directing certain of said balls in a linear sequence around the first path one at a time past the junction;

automatically by use of a motor and simultaneously and continuously directing certain others of the said balls in a linear sequence around the second path one at a time past the junction;

transferring to a different path automatically any ball passing the junction when another ball is not already occupying the different path at the junction; and

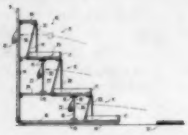
selectively blocking the junction point during different spaced time periods to prevent any ball from going through said junction to a different path.

4,395,042

GAME APPARATUS

James W. Boswell, 2401 Rockmart Hwy., Apt. 7A, Rome, Ga. 30161

Filed Mar. 10, 1982, Ser. No. 356,776
Int. Cl.³ A63B 69/36
U.S. Cl. 273—176 B 10 Claims



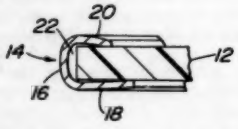
1. A game apparatus of diminutive size used to improve a player's golf stroke in which a golf ball is hit to the game apparatus from a location spaced from the game apparatus, comprising an upright structural framework having a front, back and two sides, said framework having a plurality of levels one atop the other, each level having a floor to separate it from the adjacent levels, the floor extending from the front to the rear of the game apparatus, each level having a vertically disposed flexible means spaced rearwardly from the front edge of the floor, a plurality of apertures within the flexible means, board means located rearwardly of the flexible means in conjunction with each level to which there is attached on the rearwardly side thereof a net means, said board means including a plurality of apertures juxtaposed with the net means to thereby provide a passage through the board means into the net means, whereby the player's properly stoked golf ball penetrates a selected aperture of the flexible means and a selected aligned aperture in the board means to lodge in the net means.

4,395,043

GAME CHIP

Frank Gargione, Absecon Highlands, N.J., assignor to Keystone Bingo Products, Inc., Levittown, Pa.

Filed Feb. 20, 1981, Ser. No. 236,419
Int. Cl.³ G09F 3/18; A63F 3/08
U.S. Cl. 273—239 8 Claims



1. A game chip comprising a circular disk of translucent or transparent material, a ring surrounding said disk with discrete flanges on the ring overlying and contacting the outer periphery of the opposite side faces of said disk, said ring being a smooth magnetizable sheet material free from burrs and wrinkles, said sheet material being substantially thinner than the thickness of said disk, at least one of said flanges being inclined inwardly whereby the thickest portion of the chip is across the ring at the outer peripheral surface of the disk, the inner periphery of said ring being concave, and a gap between the outer periphery of said disk and the inner periphery of said ring.

4,395,044

SPACE BOARD GAME APPARATUS

Carl J. Hula, 9021 Forest Dr., Hickory Hills, Ill. 60457

Filed Jul. 2, 1981, Ser. No. 278,341
Int. Cl.³ A63F 3/00
U.S. Cl. 273—253 9 Claims

1. A board game apparatus comprising a playing board having marked spaced defining a path,

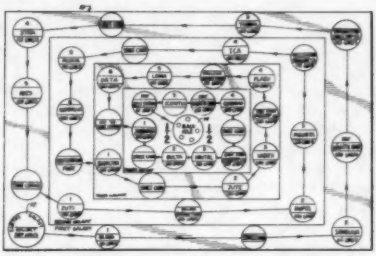
means associated with said spaces for identifying a value associated therewith,

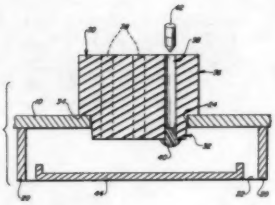
first chance means operable by the players for determining the number of spaced to be traversed,

a plurality of pieces representing money, a plurality of said money pieces being allocated to each player before the game commences,

means for providing penalties to a player and rewards to a player according to his position on said playing path, and

second chance means selectively operable by the players of the game, said second chance means comprising an upstanding member defining a plurality of generally elongated vertical apertures, and means receivable within said apertures for selectively plugging and closing the bottom of at least one of said apertures and insert means receivable in said apertures and being adapted to pass through unplugged ones of said apertures,





whereby during play a player is required to place one of said insert means into one of said apertures after at least one of said apertures has been closed by another player with said plug means, said player continuing in said game if said insert means falls completely through an unplugged one of said apertures, and said player being penalized if said insert means remains in a plugged one of the apertures.

4,395,045

TELEVISION PRECISION TARGET SHOOTING APPARATUS AND METHOD

Ralph H. Baer, Manchester, N.H., assignor to Sanders Associates, Inc., Nashua, N.H.

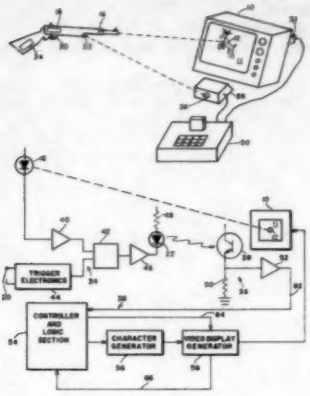
Filed Jun. 16, 1980, Ser. No. 159,530
Int. Cl.³ A63F 9/22
U.S. Cl. 273—312 13 Claims

1. Apparatus for shooting at targets displayed on the screen of a raster scan display, comprising:

a simulated weapon having means for sensing at a distance brightened raster scan segments on the screen of a raster scan display and trigger means; and

means responsive to a trigger pull for generating a signal to brighten the raster to thereby permit said simulated weapon to sense brightened raster scan segments.

9. A method of shooting at targets displayed on the screen of a raster scan display with a simulated weapon having a trigger and electro-optical sensing means, comprising the steps of:



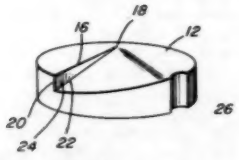
aiming at the displayed target;
pulling the trigger;
brightening the display screen; and
sensing short segments of the brightened display raster.

4,395,046

HAND THROWN GAME DISC

Stavros Cosmopulos, 8 Bridge St., Norwell, Mass. 02061

Filed Jul. 27, 1981, Ser. No. 287,304
Int. Cl.³ A63B *65/10*
U.S. Cl. 273—424 **3 Claims**



1. A game disc, comprising:
(a) a generally circular body of monolithic construction formed with top and bottom faces;
(b) at least one of said faces being in the form of an auger flight of up to 360°;
(c) said auger flight defining an obtuse angle of about 160°;
(d) said generally circular body of monolithic construction formed with at least one notch in the peripheral edge thereof;
(e) said game disc being of a solid water bouyant material of composite construction comprising a hard, heavy center portion and a lighter resilient outer portion.

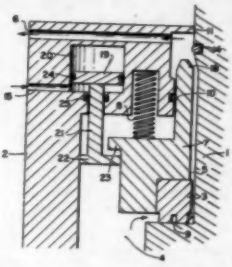
4,395,047

SHAFT SEAL WITH SEAL IMPELLER FOR MATERIALS PROCESSING MACHINERY

William F. Lahner, III, Lewisburg, Pa., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Filed Feb. 10, 1982, Ser. No. 347,645
Int. Cl.³ F16J *15/42*
U.S. Cl. 277—3 **3 Claims**

1. A shaft seal assembly for materials processing machinery of a type in which the material is fed into a machine housing containing a materials processing rotor and the material is therein processed and subsequently discharged therefrom at substantially atmospheric pressure, said seal assembly comprising:
a cylindrical seal stator carried on said housing and through which the shaft of said rotor extends,
a cylindrical seal impeller carried on said shaft within said seal stator, said cylindrical seal impeller comprised of an initial body portion adjacent fluid restraining means, and a main body portion terminating in direct proximity with the interior of said machine housing, said fluid restraining means extending between said housing and said rotor shaft at a location outboard of said seal impeller, and said fluid



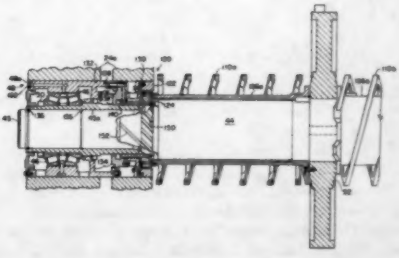
restraining means comprised of a ring member extending to within close proximity of said rotor shaft, but spaced therefrom,
a plurality of elongated, oblique, impeller vanes forming the perimeter of said seal impeller, said impeller vanes on said main body portion located coaxial with and radially outward of the impeller vanes on said initial body portions; and
fluid injection means extending from the exterior of said machine housing to a position forward of said fluid restraining means and aft of the inboard extremity of said seal impeller.

4,395,048

PUMP SAFETY DEVICE

Francis Timmermans, Jeumont, and Jean Vandervorst, Ferriere la Grande, both of France, assignors to Jeumont-Schneider, Puteaux, France

PCT No. PCT/FR81/00006, § 371 Date Sep. 24, 1981, § 102(e) Date Sep. 24, 1981, PCT Pub. No. WO81/02184, PCT Pub. Date Aug. 6, 1981
PCT Filed Jan. 22, 1981, Ser. No. 306,615
Claims priority, application France, Jan. 24, 1980, 80 01517
Int. Cl.³ F16J *15/38*
U.S. Cl. 277—65 **10 Claims**



1. A pump having a casing, a pump shaft rotatably mounted

within said casing, a high pressure fluid chamber, a low pressure fluid chamber, and a dynamic gasket mounted in said casing and contacting said shaft for separating said high pressure chamber from said low pressure chamber and a safety device, comprising:

a compressible safety gasket;

a cylindrical piston coaxially surrounding said shaft and having a first sealing surface facing a second sealing surface on said shaft with said safety gasket received therebetween, said first sealing surface being spaced from said second sealing surface by an amount such that said safety gasket is in an uncompressed state, said cylindrical piston being mounted in a chamber formed in said casing for movement axially of said shaft; and

means for moving said cylindrical piston axially of said shaft to compress said safety gasket between said first and second sealing surfaces in the event of a rupture of said dynamic gasket, whereby, while said dynamic gasket is operative, said safety gasket is not used, but when said dynamic gasket ruptures and high pressure fluid enters said low pressure chamber, said safety gasket is compressed to prevent leakage of fluid from said low pressure chamber.

4,395,049

METALLIC SEALING DEVICE FOR A HIGH-VACUUM CLOSURE

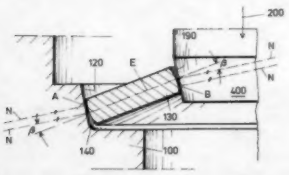
Siegfried Schertler, Haag, Switzerland, assignor to Vat Aktiengesellschaft Für Vakuum-Apparate-Technik, Haag, Switzerland

Filed Dec. 11, 1980, Ser. No. 215,404

Claims priority, application Fed. Rep. of Germany, Dec. 19, 1979, 2951150

Int. Cl.³ F16L *17/00*

U.S. Cl. 277—236 **5 Claims**



1. Metallic sealing device for a high-vacuum closure where the sealing device is repeatedly opened and closed, such as a high-vacuum valve, comprising a first sealing surface formed as a surface of revolution, a second sealing surface formed as a surface of revolution, said first and second sealing surfaces being coaxial, said sealing surfaces being repeatedly adjustable relative to one another in the axial direction for movement between an open position and a closed position, a metallic sealing ring located between said first and second sealing surfaces, said sealing ring having a cross-sectional configuration capable of rolling on said sealing surfaces when said first and second sealing surfaces are moved relative to one another between the open and closed positions, said sealing ring consists of a substantially non-ductile material, in the closed position of the sealing device the sealing forces act on said first and second sealing surfaces and on said sealing ring in the range of exclusively elastic deformation, said sealing ring being fixed to one of said first and second sealing surfaces by shrinking said sealing ring theron, the generating angle of said first and second sealing surfaces in the region of contact with said sealing ring is smaller than the friction angle, and at least the surfaces of said sealing ring in contact with said first and second sealing surface have a rounded convex configuration.

4,395,050

SEALING ARRANGEMENT SPECIFICALLY FOR SHUT OFF DEVICES

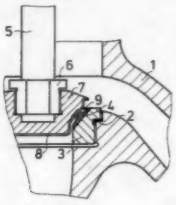
Peter Wirz, Unterkulm, Switzerland, assignor to Klinger AG, Zug, Switzerland

Filed May 20, 1981, Ser. No. 265,274

Claims priority, application Fed. Rep. of Germany, May 22, 1980, 3019516

Int. Cl.³ F16K *25/00*

U.S. Cl. 277—236 **9 Claims**



1. In a sealing arrangement for a valve having a valve seat member and a cooperating valve closure member, a thin-walled elastically deformable member carried by one of said valve members and which is engageable with the other of said valve members substantially in line contact therewith, and means for moving one of said valve members laterally relatively to the other of said valve members to seat said thin-walled elastically deformable member on the other of said valve members, the improvement comprising:

each of said thin-walled elastically deformable member and said other valve member being comprised of a metal body of a hardness in excess of 30 HRC (298 HV);

a continuous coating on top of one of the metal bodies and being of a soft, ductile metal of a hardness appreciably less than the hardness of said metal body and located at least at the area of said line contact and overlying thereat the surface of said metal body completely filling any surface, discontinuities, micropores and interstices;

said soft metal coating being shearing by lateral movement of said valve and deformable members relatively to each other by abrasive action of the hard metal surface onto the soft metal surface until establishment of direct contact between the surface of the hard metal body without coating and the exposed hard metal areas of the metal body provided with the coating, the surface discontinuities, micropores and interstices of later metal body remaining filled by said soft metal such that the mechanical closure forces are carried and transmitted by the exposed hard metal body areas only, and said no load carrying surface discontinuities, micropores and interstices remain filled by said soft metal to ensure a perfect seal.

4,395,051

QUICK-CHANGE HOLDER

Takashi Tonomura, Toyama, Japan, assignor to Kabushiki Kaisha Fujikoshi, Toyama, Japan

Filed Feb. 6, 1981, Ser. No. 232,417

Claims priority, application Japan, Feb. 21, 1980, 55-20381[U]

Int. Cl.³ B23B *31/22*

U.S. Cl. 279—75 **3 Claims**

1. A quick-change holder comprising:

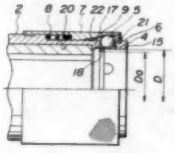
a cylindrical body of sleeved shape having one end fixed to the spindle of a machine tool and formed with both a plurality of radial through-holes, which are arranged in a circumferential direction thereon, and a center bore which extends in the axial direction thereof;

a plurality of balls loosely fitted in said radial through-holes, respectively, and having a larger diameter than the radial

thickness of said cylindrical body at the circumferential portion where said radial through-holes are arranged;

a nut insertable into the center bore of said cylindrical body at the other end thereof opposite to said spindle for attachment of an adaptor coupled in a driving power transmitting relationship to said spindle, said nut having its outer circumference formed with a circumferential groove, with and from which said balls can engage and disengage, so that said balls are brought into engagement with said circumferential groove when said nut is inserted into said circumferential body; and

a sleeve mounted on said cylindrical body, said sleeve enclosing said cylindrical body, being movable in the axial direction and being urged uni-directionally in the axial direction by means of a spring, said sleeve having its inner circumference engageable with said balls and composed of portions having larger and smaller diameters, said sleeve being axially moved against the action of said spring so that said balls can be moved outwardly in the radial direction from the smaller diameter portion to the larger diameter portion of said inner circumference thereby bringing said balls into and out of free engagement with said circumferential groove whereby said nut can be mounted on and demounted from said cylindrical body,



wherein the improvement resides in that the portion of said cylindrical body which merges into said radial through-holes and which is located at the side of said spindle is formed with a conical inner circumference which diverges to the outside; and in that a spring having free wire ends with a gap therebetween so as to be compressible inwardly in the radial direction and brought into abutment engagement with the conical inner circumference of said cylindrical body is in contact with said conical inner circumference, so that said second-named spring made engageable with said conical inner circumference is brought into abutment engagement, when said nut is not inserted, with those portions of said balls, which protrude inwardly from said radial through-holes, to push said balls outwardly in the radial direction and is thrusted, when said nut is inserted, by the leading end of said nut facing the spindle so that it is released from engagement with said balls until it is positioned on the inner conical circumference of said cylindrical body.

4,395,052

URANIUM SLURRY HAULING SYSTEM

Curtis W. Rash, Corpus Christi, Tex., assignor to Proco, Inc., Corpus Christi, Tex.

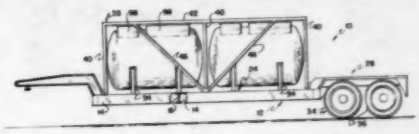
Filed Apr. 3, 1980, Ser. No. 136,487
Int. Cl.³ B60P 3/22
U.S. Cl. 280—5 C **13 Claims**

1. A trailer for hauling liquid uranium slurry, comprising

a frame having a plurality of longitudinally extending frame members, a plurality of transverse frame members rigid with the longitudinally extending frame members, wheels at one end of the frame defining a path of trailer movement generally parallel with the longitudinal frame member and a towing tongue at the other frame end for connection to a towing vehicle;

a generally cylindrical liquid slurry tank having a horizontal cylindrical axis generally parallel to the direction of travel and including at least one depending saddle mounted in direct load supporting relation with one of the transverse frame members;

a metal framework rigid with the trailer frame members for protecting the tank during trailer rollover, the framework comprising upstanding members extending to adjacent the height of the tank and horizontal members extending to adjacent the length of the tank; and



means confining the saddle and allowing racking movement of the frame independent of the tank, comprising

means constraining the saddle against movement parallel to the direction of travel; and

means allowing independent limited upward vertical movement of the saddle relative to the frame.

4,395,053

ELECTRIC CORD SUPPORT BRACKET ASSEMBLY FOR LAWNMOWERS AND THE LIKE

Paul P. Kalfas, 2735 S. Christiana Ave., Chicago, Ill. 60623

Filed Apr. 23, 1981, Ser. No. 256,916
Int. Cl.³ B62B 11/00
U.S. Cl. 280—47.34 **5 Claims**

1. A bracket assembly for supporting the electric power cord of a wheeled electric implement having a push handle of tubular construction, comprising a clamp having an opening for receiving a tubular portion of said handle and having screw fasteners for securing said clamp in place; a generally rigid and vertically-extending rod having a lower end secured to said clamp and a length sufficient to locate the upper end thereof at least as high as the shoulder of a user holding said push handle in normal operation of said implement; and guide means at the upper end of said rod for supporting and guiding the power cord of said implement upwardly over a user's shoulder, said clamp being generally C-shaped and having a pair of parallel arms joined by an integral connecting portion; said arms being spaced apart to receive said tubular portion of said handle therebetween; said arms being provided with a pair of aligned openings adjacent the free ends thereof for receiving the lower end portion of said rod; said screw fasteners being threadedly mounted upon said clamp to engage said tubular portion of said handle and to urge the same into tight locking engagement with said clamp and the portion of said rod between said arms when said fasteners are tightened, said portion of said rod between said arms being provided with a recess facing towards said connecting portion of said clamp and adapted to receive an arcuate portion of said tubular portions of said handle, whereby, upon tightening of said fasteners against said tubular

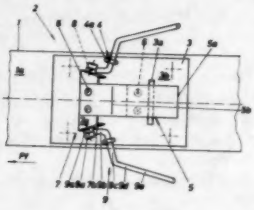
portion of said handle, said rod is locked against both axial and rotational movement relative to said clamp.

4,395,054

SKI BRAKE

Heinz Wittmann, Vienna, Austria, assignor to TMC Corporation, Baar, Switzerland

Continuation of Ser. No. 46,553, Jun. 7, 1979, abandoned. This application Jun. 11, 1981, Ser. No. 272,620
Claims priority, application Austria, Jun. 22, 1978, 4533/78
Int. Cl.³ A63C 7/10
U.S. Cl. 280—605 **10 Claims**



1. A ski brake for use on a ski, comprising:
a base plate adapted to be mounted on said ski;
bearing means on said base plate;
a pair of laterally spaced brake arms pivotally and laterally slidably mounted on said bearing means, each of said brake arms having a brake leg portion and a pedal portion, said brake arms each being pivotal between (1) a braking position wherein said brake leg portions project beneath the running surface of said ski and said pedal portion extends upwardly inclined to the upper surface of said ski and (2) a retracted position wherein said brake leg portions and said pedal portion extend above said upper surface of said ski;
a control part and pivotal securement means pivotally securing said control part to said pedal portions of each of said brake arms, said pivotal securement means effecting, upon a pivotal movement of said control part relative to said pedal portions between an initial position wherein said brake arms are positioned in their laterally outermost position and a final position wherein said brake arms are positioned in their laterally innermost position, a laterally inward movement of said brake arms, said control part including a generally inverted U-shaped member having a bight portion with an upwardly facing surface and a pair of downwardly extending support legs at the lateral edges of said bight portion, said support legs being formed at a right angle to said bight portion and opening at a diverging angle away from the free ends of said brake leg portions, said pivotal securement means effecting said pivotal coupling about an axis that is normal to the plane of said support legs; and
resilient means effecting an erection of said brake arms to said braking position and a simultaneous urging of said control part to said initial position thereof to urge said brake arms to their said initial position thereof.

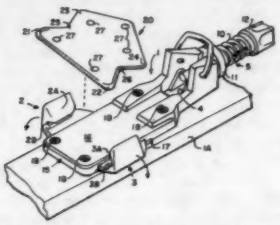
4,395,055

SKI RELEASE SIDE CLAMPING BINDING WITH HINGED JAW MEMBERS

Richard G. Spademan, 1421 Old County Rd., Belmont, Calif. 94002

Filed Mar. 20, 1978, Ser. No. 890,574
Int. Cl.³ A63C 9/08
U.S. Cl. 280—624 **7 Claims**

1. In a ski release binding comprising at least one movable jaw member and means for releasably clamping a ski boot to a ski with the jaw member rearward of the toe and forward of the rear of the heel of the ski boot wherein, during release, the jaw member is moved, the improvement comprising means for



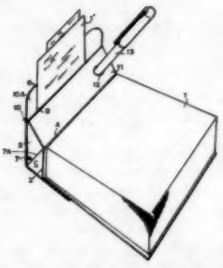
allowing the jaw member to move in a second direction after the jaw member is moved a predetermined distance in a first direction.

4,395,056

NOTE BOOKLET, PROVIDED WITH A FOLDABLE COVER, EFFECTIVE TO ACT AS A SHEET AND PEN HOLDER

Enrico Sferragatta, Monza, Italy, assignor to Mille Note System S.r.l., Monza, Italy

Filed Jul. 13, 1981, Ser. No. 282,519
Claims priority, application Italy, Oct. 16, 1980, 23113/80[U]
Int. Cl.³ B42D 3/00; B65D 5/52
U.S. Cl. 281—31 **4 Claims**



1. A note booklet, which comprises a plurality of superimposed note sheets secured in a pad to the back of a cover member, said cover member having a first plane section connected to said back along a first fold line, a second plane section connected to said first plane section along a second fold line, a third plane section connected to said second plane section along a third fold line, and a flap connected to said second plane section to define therewith a pocket; said cover member being foldable into a configuration whereby said first plane section extends backwards from said pad of note sheets to position said second plane section and flap behind said note sheets with said flap and pocket exposed behind the note sheets, and with said third plane section extending in underlying relation to the bottom of said note sheets pad.

4,395,057

BOOK HOLDER

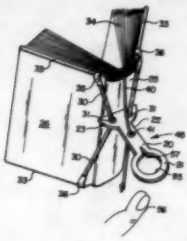
John W. Young, 260 Overlook Dr., Lancaster, Ohio 43130

Filed Apr. 29, 1981, Ser. No. 258,609
Int. Cl.³ B42D 9/00, 3/16
U.S. Cl. 281—42 **8 Claims**

1. A holder for a book which has opposing covers attached at opposite sides to a book spine, each cover having in it reading position a top and a bottom edge, the holder comprising:
(a) a handle means constructed to contact the cover of the

book on the spine of the book and having a digit receiving opening;

(b) a pair of elastic bands connected to the handle means, each band having attachment means at each end constructed to attach over the opposite top and bottom edges of a different one of said book covers the combined length



of each band and its attachment means being less than the distance between the top and bottom edges of said covers when said connection means are detached from the covers and said elastic bands are relaxed and being constructed to attach to the book by elastic tension of the bands when the attachment means fit over the opposite top and bottom edges of the book covers.

4,395,058

CLIP FOR SUSPENSION FILING

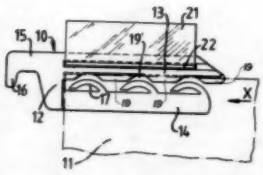
Christopher E. Terrell, London, England, assignor to W. F. Industries, Inc., Wheeling, Ill.

Continuation-in-part of Ser. No. 955,655, Oct. 30, 1978, abandoned. This application Mar. 17, 1981, Ser. No. 244,709

Claims priority, application United Kingdom, Nov. 3, 1977, 45845/77

Int. Cl.³ B42D *17/00*; B42F *15/00*

U.S. Cl. 281—46 **3 Claims**



1. A clip for removably engaging the side rail of a suspension filing system for the filing of magazines, journals and the like, comprising a generally flat, one piece, resilient plastic member having a bifurcate part and a hook part, said member having a length and depth both substantially greater than its thickness, the bifurcate part having two fingers extending in a direction lengthwise of said member away from the hook part and being displaced from one another in a direction depthwise of said member, said fingers being engageable respectively inside and outside the spinal portion of a magazine for gripping said spinal portion therebetween, one of said fingers having at least one resiliently deflectable arcuate prong having a free end and a convex portion projecting therefrom for engaging the inside spinal portion of a magazine; the other of said fingers having at least two longitudinally spaced, alternately arranged projections on opposite sides of an edge of said other finger facing said one finger, the space between successive projections forming a notch aligned with the convex portion of said prong, whereby the prongs bias the inside spinal portion of the magazine to thereby press the outside spinal portion of the magazine into the notch while the alternately arranged projections engage opposite faces of the magazine adjacent the spinal portion thereof to enhance the gripping action of the clip by resisting end-wise as well as rotational displacement of the clip; said hook part having an open-sided recess opening in a depthwise direction, whereby when two clips are engaged at opposite ends of the spinal portion of a magazine, the hook part on each clip is engageable over a respective side rail of the suspension filing system with said rail received in the recess and said fingers being disposed horizontally, whereby the magazine and associated clips are removably suspended from the two side rails of the suspension filing system.

4,395,059

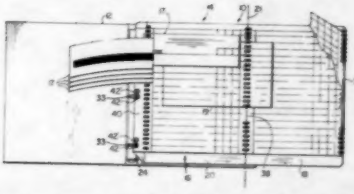
FOLDABLE POSTING BOARD ASSEMBLY

Thomas H. Russell, III, 14 Sulgrave Rd., West Hartford, Conn. 06107

Filed Nov. 19, 1980, Ser. No. 208,306

Int. Cl.³ B42F *13/00*

U.S. Cl. 282—29 B **27 Claims**



1. A foldable posting board assembly comprising a foldable posting board and at least one record sheet, said foldable posting board having at least two generally rectangular panels and means for hingedly connecting said panels together in foldable relation to each other about a hinge line and defining a column of mounting elements located along a line substantially coincident with said hinge line to hold a portion of said one record sheet in a predetermined position relative to said posting board, said posting board being movable between an opened position wherein said panels are disposed within a generally common plane and a closed position wherein said panels are in generally overlying relation relative to each other, said mounting elements projecting beyond a surface of said panels when said posting board is in its opened position, said one record sheet having a column of apertures therethrough spaced inwardly from the edges thereof and a fold line extending thereacross in generally bisecting relation to said apertures and dividing said record sheet into separate sections, said mounting elements projecting bodily through said apertures and beyond said one record sheet when said posting board is in its open position and said one record sheet is unfolded along said fold line, said apertures when said record sheet is unfolded along said fold line serving to each entirely surround a respective one of said mounting elements to locate said record sheet relative to said mounting elements, said one record sheet being foldable along said fold line with said mounting elements projecting therethrough and to a position wherein one of said sections overlies another of said sections, and said apertures when said record sheet is folded along said fold line serving to each partially surround a respective one of said mounting elements to locate said record sheet relative to said mounting elements.

4,395,060

PORTABLE, REUSABLE PIPE COUPLING

Edward L. Lapham, 13219 Pine Dr., Cypress, Tex. 77429

Filed Feb. 20, 1981, Ser. No. 236,232

Int. Cl.³ F16L *35/00*

U.S. Cl. 285—39 **11 Claims**

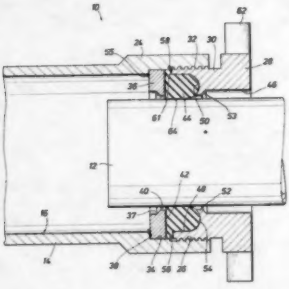
1. A portable, reusable coupling for connecting cylindrical conduit, said coupling comprising:

(a) an elongated tubular coupling body defining a generally

cylindrical internal passage of sufficient dimension to receive end portions conduit therein, said coupling body being formed to define internal shoulder means at each extremity thereof, said coupling body also having internal body threads at each extremity thereof;

(b) annular metal seal support ring means being provided within each extremity of said coupling body and having abutting relation with said internal shoulder means;

(c) seal retainer means being provided at each extremity of said coupling, each of said seal retainer means defining annular externally threaded connection rim means adapted to be received in connected adjustable relation by said internal body threads, said seal retainer means cooperating with said annular seal support ring means to define a variable volume internal seal chamber having said seal support ring means as a circular wall thereof and to define an annular variable volume internal seal locking groove, said seal retainer means further defining a curved concave circular seal support surface extending to the inner periphery of said seal retainer means and forming a seal supporting wall of said seal chamber; and



(d) annular resilient seal means being disposed within said internal seal chamber and defining a deformable annular sealing portion having a generally cylindrical inner sealing periphery for sealing engagement with end portions of conduit, said resilient seal means being of sufficient internal dimension to receive end portions of conduit therein, upon linear movement of said seal retainer means to reduce the volume of said seal chamber said sealing portion of said seal means being mechanically deformed thus forcing the inner peripheral sealing portion thereof into sealing engagement with end portions of conduit, said seal means defining a convex curved circular surface having mating engagement with said curved concave circular support surface of said seal retainer means, said seal means further defining a radailly outwardly extending circular locking flange being received within said seal locking groove, upon said linear movement of said seal retainer means said locking flange of said seal means being mechanically locked within said seal locking groove.

4,395,061

SWIVEL UNIT

Lawrence E. Helzer, Buena Park, Calif., assignor to Hughes Tool Company, Houston, Tex.

Filed Jun. 15, 1981, Ser. No. 273,821

Int. Cl.³ F16L *27/00, 17/02, 21/00*

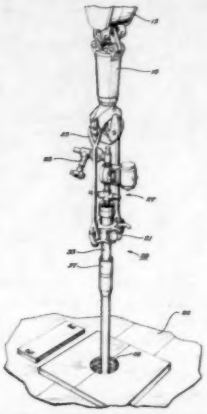
U.S. Cl. 285—281 **5 Claims**

1. A swivel unit for an inflatable packer drill stem test tool assembly, comprising:

an outer housing having a lower end adapted for connection to said drill stem test tool and having an upper end;

an inner shaft having a base portion received within said outer housing and having a neck portion protruding from said outer housing;

bearing means for rotatably mounting said outer housing about said inner shaft; and



wherein said outer housing has a downwardly facing shoulder formed in the exterior surface thereof for supporting said assembly.

4,395,062

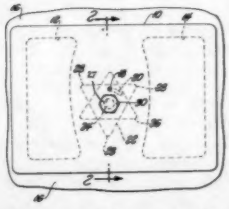
COVER HOLD DOWN MECHANISM

Erwin F'Geppert, Novi, Mich., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 2, 1980, Ser. No. 193,225

Int. Cl.³ E05C *5/04*

U.S. Cl. 292—64 **1 Claim**



1. In combination, first and second members (**16** and **10**) designed to be secured together, said first member having an accessible face and an inaccessible face, said first member having a triangular opening (**26**) extending between the two faces, said second member having an opening (**27**) extending therethrough; a connector device comprising a scew (**24**) having an enlarged accessible head (**30**) and a threaded shank extending through the opening in the second member toward the first member, a nut (**22**) threaded on the shank, said nut having a triangular perimetrical configuration that is slightly smaller dimension than said triangular opening whereby the nut can be extended through the triangular opening without disconnecting the nut from the screw, said nut having a cutaway area (**20**) whose length measured about the axis of the screw is approximately sixty degrees, and a motion-limiting member (**18**) extending from the second member into the cutaway area of the nut so that after the nut has been passed through the triangular opening in the first member the screw

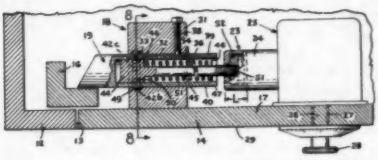
can be turned to initially produce limited rotary movement of the nut approximately sixty degrees into a position of axial overlapment with the inaccessible surface of said first member, said screw being further turnable to cause the nut to move axially along the screw into tightened engagement with the inaccessible face of said first member; said motion-limiting member acting to prevent rotation of the nut while said nut is undergoing said last-mentioned axial motion toward the inaccessible face of said first member.

4,395,063

SELF INTERLOCKING DEAD BOLT ASSEMBLY

Eric L. Bianco, 405 E. First Ave., Roselle, N.J. 07203

Filed May 12, 1980, Ser. No. 148,720
Int. Cl.³ E05B *9/02*
U.S. Cl. 292—150 **22 Claims**



1. A self interlocking dead bolt assembly movable from an unlocked position to a locked position and vice versa relative a strike member comprising,

a. bolt guide means having a bore end to end therethrough, and locking groove means inwardly of one end of said bore,

b. an elongated dead bolt means slidably mounted in the bore of the bolt guide means for movement from the unlocked to the locked position and vice versa,

c. said dead bolt means having a strike end and an elongated chamber extending inwardly from the end remote from the strike end to define an annular wall on said dead bolt means,

d. transverse passage means in said annular wall a predetermined distance from the strike end of the dead bolt means,

e. sized ball means operatively associated with said transverse passage means,

f. an actuating means for moving the dead bolt from the unlocked to the locked position and vice versa,

g. said actuating means also connected for relative movement with the dead bolt means to normally urge said sized ball means to move through said transverse passage means into engagement with said locking groove means to interlock the dead bolt in the locked position, and

h. said ball members to move out of said locking groove and to return through said transverse passage means when said actuating means initiates movement of said dead bolt to the unlocked position.

4,395,064

ELECTRIC AUTOMOBILE TRUNK LOCK MECHANISM

Dominique Bellot, Rueil, and Michel Barre, Chaville, both of France, assignors to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

Filed Apr. 14, 1981, Ser. No. 253,909
Claims priority, application France, Apr. 14, 1980, 80 08259
Int. Cl.³ E05C *3/26*
U.S. Cl. 292—201 **6 Claims**

1. An electric lock mechanism for the servo locking and unlocking of a vehicle hatch lid, comprising a fixed catch mounted on said hatch lid and a compact motor unit mounted on the body of said vehicle, wherein said compact motor unit comprises:

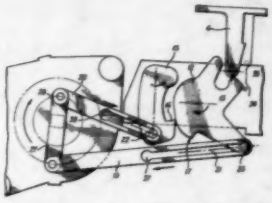
an electric motor having a shaft;

a rotary bolt engagable with said catch;

a blocking lever adapted to block said bolt in a locked position;

crankshaft means connected to said motor shaft;

first and second links respectively connecting said crankshaft means to said bolt and said blocking lever; and



means for rotating said electric motor shaft by half turn intervals in a first direction;

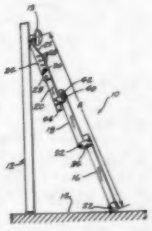
whereby each half turn of said motor shaft alternately locks and blocks said lock, and unlocks and unblocks said lock.

4,395,065

DOOR STOP MECHANISM

Ben L. Nelson, Rte. #1, Box 4995, Bonita Springs, Fla. 33923, and Leonard L. Hayes, 1906 - 10th Ave., Lewiston, Id. 83501

Filed Aug. 31, 1981, Ser. No. 297,872
Int. Cl.³ E05C *17/30, 17/32*
U.S. Cl. 292—339 **9 Claims**



1. A door stop mechanism comprising,

a lower rod segment having upper and lower ends,

a center rod segment having upper and lower ends, the lower end of said center rod segment underlying the upper end of said lower rod segment and being pivotally secured thereto by a first pivot means,

an upper rod segment having upper and lower ends, the lower end of said upper rod segment underlying the upper end of said center rod segment and being pivotally secured thereto by a second pivot means,

said first pivot means attached to the upper end of said lower rod segment and receiving the lower end of said center rod segment,

said second pivot means attached to the lower end of said upper rod segment and receiving the upper end of said center rod segment.

4,395,066

GRAB

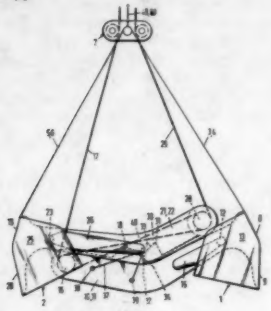
Leendert van Huuksloot, Zevenbergschen Hoek, Netherlands, assignor to Nemag B.V., Zierikzee, Netherlands

Filed May 27, 1981, Ser. No. 267,660

Claims priority, application Netherlands, May 30, 1980, 8003176

Int. Cl.³ B66C 3/12

U.S. Cl. 294—70 5 Claims



1. A grab comprising a pair of buckets interconnected by arms capable of pivoting movement relative to each other, the free ends of said arms are provided with means for guiding operating or closing ropes by which the buckets can be opened and closed, said buckets have rear edges secured by means of hoist ropes or the like to a cross-beam, to which said hoist ropes are connected, characterized in that the arms are provided at some distance from the free ends with arcuate bridge members forming arcuate elevations directed to one another, and as the grab buckets are opened and closed the contact point between said bridge members is displaced as said bridge members and said arcuate elevations roll one over the other.

4,395,067

LIFTING ASSEMBLY

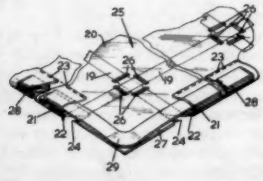
Peter D. L. Robin, Cheshire, England, assignor to Spanset Inter A.G., Basel, Switzerland

Filed Jun. 25, 1981, Ser. No. 277,446

Claims priority, application United Kingdom, Jun. 26, 1980, 8020924

Int. Cl.³ B66C 1/18

U.S. Cl. 294—74 10 Claims



1. A lifting assembly, comprising: a cloverleaf lifting sling in combination with a base of plastics sheet material, said sling having a central portion and four loop portions forming a cloverleaf configuration, said base serving to hold said central portion to maintain the sling in its cloverleaf configuration, and having peripheral sleeve means for storing said loop portions of the sling.

4,395,068

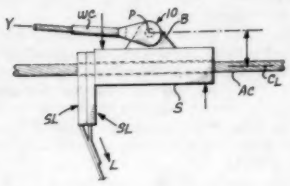
STATIC LINE RETRIEVAL APPARATUS

Gerald C. Simmons, Bothell, and Noel E. Hilby, Maple Valley, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Feb. 23, 1981, Ser. No. 237,025

Int. Cl.³ B66C 1/14

U.S. Cl. 294—78 R 9 Claims



1. Winch cable driven retrieval apparatus for retracting static lines slidably mounted on a fixed anchor cable or the like, comprising:

a retrieval member having an opening extending completely therethrough of a diameter sufficient to insert an anchor cable completely through said retrieval member, said retrieval member further including a front end surface adapted to confront at least one static line attachment member slidably mounted on said anchor cable;

a pair of attachment members extending from oppositely disposed side portions of said retrieval member, said attachment members including spaced forward end portions positioned on opposite sides of said anchor cable and located along an imaginary line which passes through said anchor cable;

coupling means joining a winch cable assembly with each forward end portion for smoothly drawing said retrieval member along said anchor cable toward a retracted position responsive to selective retraction of said winch cable;

whereby said retrieval member contacts and slides said at least one static line attachment member toward said retracted position while inherently resisting the formation of kinks in said anchor cable and keeping friction to a minimum.

4,395,069

PINCERS-TYPE GRIPPER FOR SEIZING OBJECTS AND GRIPPING HEAD EQUIPPED WITH SUCH GRIPPERS

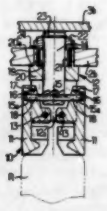
Gerard Lebret, Dompierre sur Avre, France, assignor to E. P. Remy et Cie., Dreux, France

Filed Aug. 6, 1981, Ser. No. 290,506

Claims priority, application France, Sep. 30, 1980, 80 20941

Int. Cl.³ B25J 15/00

U.S. Cl. 294—87.22 6 Claims



1. A gripper for seizing elongated objects such as bottles, the gripper comprising:

stationary support means having a central axis extending between a clevis end portion and an opposite end;

a set of jaws hingedly mounted in said clevis end portion, each jaw being rotatable between an open position and a shut position about a respective pivot axis spaced from and lying in a plane perpendicular to said central axis;

an operating rod slidably disposed in said stationary support coaxial with said central axis, said operating rod having a first end portion extending between said jaws and a second end portion;

an actuating member fastened to said operating rod adjacent said first end and extending transversely to said rod, each of said jaws having an aperture loosely receiving said actuating member, the actuating member having two lateral contact surfaces parallel to each other, and the aperture of each jaw having a planar opening cam surface and an opposed planer closing cam surface, said cam surfaces being non-parallel and extending at an angle such that said opening cam surface is parallel to the contact surfaces of the actuating member when the jaws are in the open position and said closing cam surface is parallel to the contact surfaces of the actuating member when the jaws are in the shut position;

stop means fixed on said operating rod; and

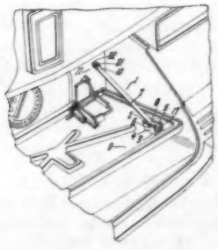
spring means disposed between the stationary support means and said stop means and urging the operating rod in the direction such that one contact surface of the actuating member bears against the opening cam surfaces of said jaws for urging the jaws to said open position.

4,395,070

HOLD OPEN APPARATUS

Jan S. Veltman, 6747 Norwood Ave., Allen Park, Mich. 48101, and Edward A. Ferrari, 809 E. Seven Mile, Detroit, Mich. 48203

Filed Feb. 17, 1981, Ser. No. 234,615
Int. Cl.³ B62D *25/00*
U.S. Cl. 296—1 C **9 Claims**



1. A hold open apparatus for permitting a movable external member which is biased in a normally-closed position adjacent a stationary external member to be held in an open position spaced apart from said stationary external member, comprising:

a base member having means for attaching said apparatus to said movable external member;

a rod member pivotally mounted on said base member;

resilient means on said base member urging said rod member to automatically rotate into a position in which said rod member extends upwardly from said base member;

said rod member being rotatably connected to said base member so that said rod member can be rotated into a position in which a substantial portion of said rod member extends substantially parallel to said base member;

said rod member having a lower portion thereof which limits the movement of said rod member upwardly to an upper position under the influence of said resilient means;

said lower portion of said rod member cooperating with said base member after said rod member has rotated a predetermined amount to limit the rotational movement of said rod member relative to said base member;

said movable external member being biased in said normally-closed position adjacent said stationary external member in a fashion so that there is an axis of rotation disposed between between said moveable external member and said stationary external member;

said rod member being constrained to move in a plane which intersects said axis of rotation disposed between said movable external member and said stationary external member in a predetermined angular relationship; and

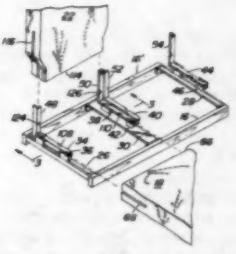
said resilient means automatically urging said rod member to rotate into said upper position when said movable external member is moved away from said normally-closed position adjacent said stationary external member.

4,395,071

FURNITURE WITH REMOVABLE CUSHIONS

William B. Laird, 861 E. Market St., Marietta, Pa. 17547

Filed Feb. 23, 1981, Ser. No. 237,338
Int. Cl.³ A47C *4/02*
U.S. Cl. 297—440 **10 Claims**



1. Furniture of the chair, love seat and couch type comprising a frame having at least one removable cushion, said cushion having oppositely disposed grooves, a pair of tongues on said frame, each tongue projecting into one of said grooves, latch means within said removable cushion, said latch means including a latch member projecting into at least one of the grooves on the cushion for latching cooperation with mating structure on the associated tongue, and an actuator on the cushion and connected to the latch member for releasing the latch member so that the cushion may be removed.

4,395,072

VEHICULAR HYDRAULIC BRAKE SYSTEM

Juan Belart, Walldorf, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Jul. 31, 1981, Ser. No. 289,015
Claims priority, application Fed. Rep. of Germany, Sep. 13, 1980, 3034628
Int. Cl.³ B60T *8/02, 13/14*
U.S. Cl. 303—114 **16 Claims**

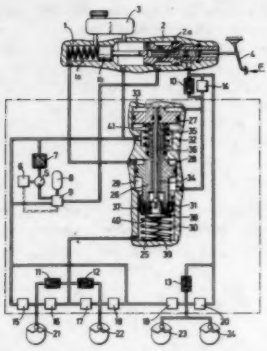
1. A control arrangement for use in hydraulic braking systems, particularly of automotive vehicles equipped with anti-skid control devices, for controlling the pressure of hydraulic fluid admitted into brake circuits leading to respective brake-operating cylinders in dependence on pressures developed in a master cylinder and an auxiliary source, comprising

a housing part having at least one internal surface bounding a chamber centered on an axis; and

a control unit accommodated in said chamber and including an actuating piston axially movable in said chamber and subdividing the same into at least an actuating compartment hydraulically connected with the master cylinder and a working compartment hydraulically connected with at least one of the brake circuits in use;

means on said actuating piston for at least partially bounding a communicating path open toward the auxiliary source in use and toward said working compartment; and

means for preventing flow of the hydraulic fluid in said



path when the pressure in said working compartment predominates and for permitting such flow when the pressure supplied from the auxiliary source predominates in use, including a deflectable sealing element carried by said actuating piston and extending into said path.

4,395,073

BRAKE FLUID PRESSURE CONTROL APPARATUS IN SKID CONTROL SYSTEM

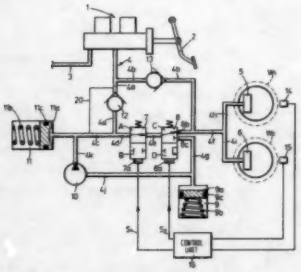
Tetsuro Arikawa, and Yasuo Samatsu, both of Yokosuka, Japan, assignors to Nippon Air Brake Co., Ltd., Kobe, Japan

Filed Mar. 2, 1981, Ser. No. 239,417

Claims priority, application Japan, Mar. 3, 1980, 55-26239; Mar. 14, 1980, 55-32827

Int. Cl.³ B60T *8/02*

U.S. Cl. 303—116 **6 Claims**



1. A brake fluid pressure control apparatus in a skid control system for a vehicle having at least one wheel and a brake for the wheel comprising:

(a) a fluid pressure control valve device arranged between a master cylinder and wheel cylinder of said brake for the wheel, said fluid pressure control valve device receiving control signals of a control unit measuring the skid condition of the wheel to control the brake fluid pressure to said wheel cylinder;

(b) a hydraulic reservoir which, when the brake fluid pressure to said wheel cylinder is decreased with control of said fluid pressure control valve device, reserves the brake fluid discharged through said fluid pressure control valve device from said wheel cylinder;

(c) a pressure fluid supply conduit connecting said master cylinder with said fluid pressure control valve device;

(d) a fluid pump for returning the brake fluid from said hydraulic reservoir into said pressure fluid supply conduit;

(e) a first check valve arranged in said pressure fluid supply conduit, said first check valve being opened when the brake fluid flows from said master cylinder toward said fluid pressure control valve device, and the outlet of said fluid pump being connected to said pressure fluid supply conduit between said first check valve and said fluid pressure control valve device;

(f) a pressure fluid return conduit connecting said master cylinder with said wheel cylinder;

(g) a second check valve arranged in said pressure fluid return conduit, said second check valve being opened when the brake fluid flows from said wheel cylinder toward said master cylinder; and

(h) means for receiving the brake fluid discharged from said fluid pump, said receiving means being a fluid pressure adjusting valve having a chamber, said brake fluid discharged from said fluid pump being led into said chamber of the fluid pressure adjusting valve and said chamber, when said valve is opened, communicating with said hydraulic reservoir.

4,395,074

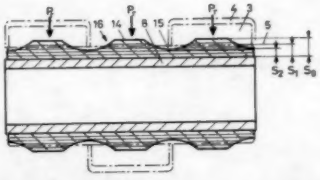
CONNECTING SPIKE FOR FLEXIBLY CONNECTING TWO CHAIN LINKS OF A TRACK

Walter Haldimann, Pfäffikon; Fritz Held, Forch, and Rudolf Fehr, Pfäffikon, all of Switzerland, assignors to Huber & Suhner AG, Herisau, Switzerland

Filed Jul. 1, 1980, Ser. No. 165,194

Int. Cl.³ B62D *55/20*

U.S. Cl. 305—43 **3 Claims**



1. Connecting spike for flexibly connecting the chain links of a track, where said spike comprises a metal rod, and an integral elastic sheathing undetachably bonded thereto, said sheathing having thicker and thinner portions, said thicker portions being provided by longitudinal ribs and said thinner portions being provided by longitudinal channels having an approximately circular-segmented cross-section, such that the radius of the cross section of said spike at said thicker portions is greater and at said thinner portions is smaller respectively than the radius of the chain link bore of said track, said sheathing upon insertion of the spike into said chain link bore being elastically deformed such that axial shift of said spike within said bore is substantially prevented.

4,395,075

MISALIGNMENT SYSTEM FOR A MICROTOME

Lawrence R. Barrett, Washington, and Allan J. Weiner, Weston, both of Conn., assignors to E. I. Du Pont de Nemours & Co., Wilmington, Del.

Filed Mar. 24, 1982, Ser. No. 361,262

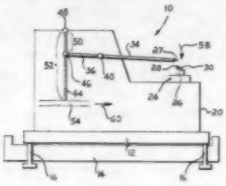
Int. Cl.³ F16C *32/02*; G01N *1/06*

U.S. Cl. 308—2 R **9 Claims**

1. In a microtome of the type having a first member pivotally

movable with respect to a second member on a pair of main pivot balls captured between fixed sockets provided on one of the members and a fixed and a movable socket provided on the other of the members, the improvement which comprises:

a misalignment pivot system for permitting movement without the generation of a restoring force of the movable socket in the direction of an axis (Q-Q') connecting the centerlines of the balls to match the exact separation between the main pivot balls,



the misalignment pivot system itself comprising a socket and a groove formed on either the movable socket or on one of the members and a pair of fixed sockets confrontationally provided on the other of the movable socket or the one of the members, a first misalignment pivot ball captured between a pair of fixed sockets and a second misalignment pivot ball captured between the fixed socket and the groove, the axis (W-W') between the centers of the misalignment pivot balls being substantially perpendicular to the axis (Q-Q') connecting the centerlines of the main pivot balls.

4,395,076

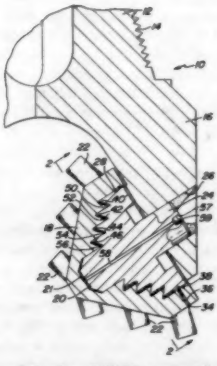
BEARING DESIGN FOR DRILL BIT

Daniel R. Sabre, 1520 Palethorp St., Philadelphia, Pa. 19122

Filed Nov. 12, 1981, Ser. No. 320,185

Int. Cl.³ F16C *19/00*

U.S. Cl. 384—92 **9 Claims**



1. A rotary earth boring drill bit comprising

a bit body having at least one apron,

a bearing journal extending from said apron, and

a rotary cone cutter rotatively mounted on said bearing journal,

said bearing journal having a generally cone-shaped bearing wall formed by a plurality of steps extending along said bearing wall,

each of said steps comprising a pair of adjacent walls joined at an apex having an acute included angle,

said cutter having a bearing wall cooperating with said bearing wall of said bearing journal and formed with a plurality of steps mating in bearing contact with said steps of said bearing journal.

4,395,077

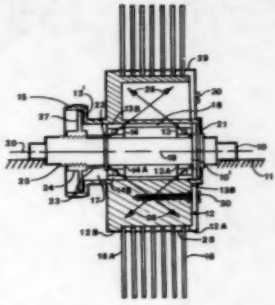
SPINDLE ASSEMBLY

Simon F. Wong, Sunnyvale, Calif., assignor to Sperry Corporation, New York, N.Y.

Filed Jul. 27, 1981, Ser. No. 286,903

Int. Cl.³ F16C *19/06*

U.S. Cl. 308—189 A **6 Claims**



1. A spindle assembly comprising: a hub having an inner cylinder having an interior wall forming a hub bore, an outer cylinder having an exterior wall around which a member to be rotated is positioned, and a plurality of ribs angularly disposed about said inner cylinder and each extending lengthwise of the hub for connecting the exterior wall of the inner cylinder to the interior wall of the outer cylinder, a shaft extending through said bore and adapted at each end for fixed mounting to a stationary support, said shaft defining an annular shoulder near one end thereof, bearing means disposed within the hub bore intermediate the hub and the shaft for rotatively supporting the hub concentrically about the shaft such that the center line of the hub bore is substantially collinear with the longitudinal axis of the shaft, said bearing means comprising first and second ball bearings disposed along the hub bore in spaced relation to one another, said ball bearings each having an outer race bonded to the hub bore, said first bearing having a side distal the second bearing, said side contacting said shoulder, preloading means engaging said bearing means for supplying a force therethrough to hold the shaft longitudinal axis in substantially collinear alignment with said hub bore center line during rotation of the hub about the shaft, said preloading means including a spring circumscribing said shaft proximate the side of said second bearing distal the first bearing, said shaft having a threaded portion and a nut engaged with said threaded portion for compressing said spring so as to establish forces between said shaft and said hub via said ball bearings, and a pulley part connected with the outer cylinder of said hub for receiving applied force to rotate the hub with respect to the shaft.

4,395,078

BEARING UNIT WITH IMPROVED INNER RACE

Harvey E. Smith, Sr., Grand Rapids, and Seigfried K. Weis, Byron Center, both of Mich., assignors to C. L. Frost & Son, Inc., Grand Rapids, Mich.

Continuation of Ser. No. 124,556, Feb. 25, 1980, Pat. No. 4,323,288. This application Sep. 14, 1981, Ser. No. 301,871

The portion of the term of this patent subsequent to Apr. 6, 1999, has been disclaimed.

Int. Cl.³ F16C *19/06*

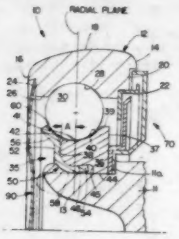
U.S. Cl. 308—196 **10 Claims**

1. In a bearing assembly having inner and outer race means for supporting a plurality of anti-friction ball members therebe-

tween, and a plurality of such balls positioned between inner and outer raceways on said race means, the improvement comprising:

said inner race means having first support means including a major portion of said inner raceway for supporting the primary portion of any load on said assembly and second support means engaged with said first support means and including a minor portion of said inner raceway for retaining and guiding said ball members and supporting a minor portion of any load on said assembly;

said major raceway portion on said first support means extending on both sides of a radial plane of said assembly which passes through the center line of said ball members and the root diameter of said inner raceway;



said first support means including a first shoulder having a diameter slightly larger than said root diameter of said inner raceway to allow insertion of said ball members between said inner and outer raceways prior to assembly of said second support means without heating or otherwise resizing or modifying any part of said inner or outer race means or ball members during assembly, said first shoulder also providing resistance to removal of said ball members after insertion;

said first support means also having a generally radially extending surface adjacent said first shoulder and a recess;

said second support means including a portion engaging said generally radially extending surface of said first support means and a flange bent into and engaging said recess to retain said inner race members in engagement.

4,395,079

PLASTIC MOLDED MESH SCREEN COVERING FOR AUDIO CABINETS

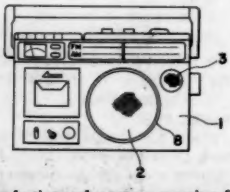
Masayoshi Yano, and Fuminori Hirose, both of Hirakata, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jan. 19, 1981, Ser. No. 226,089

Claims priority, application Japan, Jan. 19, 1980, 55/4793; Jan. 19, 1980, 55/4886[U]

Int. Cl.³ A47B *81/06*

U.S. Cl. 312—7.1 **6 Claims**



1. A molded plastic mesh screen covering for at least one sound emitting opening defined in an audio cabinet, said mesh screen structure comprising a plurality of equally spaced latitudinal threads extending generally perpendicular to a plurality of equally spaced longitudinal threads, said latitudinal and longitudinal threads being interwoven so as to intersect to be integrally interconnected together at each area of intersection to provide a unitary structure having a diameter measured from a mold parting line, said line defined as passing through said areas of intersection, to a diametrically opposite point on each of said respective threads in a direction facing outwardly from said cabinet, said diameter being substantially equal to the diameter of said threads.

4,395,080

CONSTRUCTION SET FOR THE MANUFACTURE OF FRAMES FOR FURNITURE

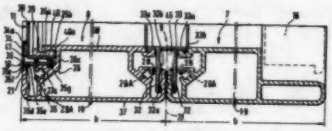
Klaus Winn, Giessen; Klaus-Ludwig Engelbach, Dillenburg, and Leo Schnirch, Haiger, all of Fed. Rep. of Germany, assignors to Weyel KG Visuelle Einrichtungen, Haiger, Fed. Rep. of Germany

Filed Jan. 28, 1981, Ser. No. 229,387

Claims priority, application Fed. Rep. of Germany, Jan. 31, 1980, 3003367

Int. Cl.³ A47B *47/00*; F16B *12/00*

U.S. Cl. 312—257 R **23 Claims**



1. A construction set for the assembly of frames for furniturelike display cabinets and show cases, comprising:

an elongated first profile means having a closed surface at one edge thereof and a first connecting edge means at another edge remote from said one edge, said first profile means having a first flat surface thereon;

an elongated second profile means having a second connecting edge along an edge adjacent said first connecting edge, said first and second connecting edges being a mirror image of the other, said second profile means having a second flat surface thereon coplanar with said first planar surface, said first and second connecting edges each including first means defining a space between said first and second profile means and separating said first and second flat surfaces and second means defining a connecting leg, said connecting legs extending parallel to each other and perpendicular to said first and second flat surfaces, said first and second profile means abutting one another along said first and second connecting edges on a side thereof remote from said space; and

connecting profile means received in said space and having a pair of spaced and parallel legs straddling and engaging said first and second connecting legs, and a connecting flat wall member connected to and extending at a right angle to said first and second connecting legs, said connecting profile means functioning to hold said first and second profile means together, said connecting flat wall member having an outwardly facing surface which is coplanar with said first and second flat surfaces and closing said space between said first and second profile means.

4,395,081

ELECTRICAL CONNECTOR

Aleksandras A. Melys, Hillside, N.J., assignor to Sweda International, Inc., Pine Brook, N.J.

Filed Apr. 6, 1981, Ser. No. 251,426

Int. Cl.³ H01R *4/66*

U.S. Cl. 339—14 R **8 Claims**

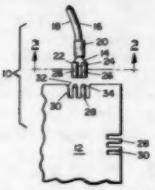
1. An electrical ground plane connector system, comprising:

an integral sheet metal contact having an open barrel crimp

portion which crimps about a conductive wire and a ground plane connector portion; and

a ground plane of a conductive material having a plurality of slots cut into an edge thereof to form at least a pair of tines each tine having a plurality of longitudinally extending sharp conductive edges;

said ground plane connector having rolled longitudinal sides



which form partially open spring cylinders for receiving said tines, wherein said sharp conductive edges frictionally engage said spring cylinders;

each of said spring cylinders being adapted to be in contact engagement with at least three of said plurality of conductive edges of its respective tine; whereby the degree of electrical contact between said ground plane and contact is improved.

4,395,082

OBTURATOR

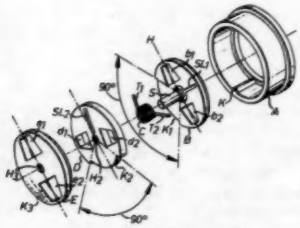
Clive S. Rumble, Apt. 2106, 330 Spadina Rd., Toronto, Canada

Filed May 27, 1980, Ser. No. 153,523

Claims priority, application United Kingdom, Jun. 1, 1979, 7919147

Int. Cl.³ H01R *13/44*

U.S. Cl. 339—41 **3 Claims**



1. An obturator, comprising:

an outer housing having an inner surface with a key means extending inwardly of said inner surface;

an outer first plate rotatably disposed in said housing, having a first arcuate keyway for cooperating with said key means to allow limited rotation of said first plate with respect to said housing, two apertures for accepting prongs, and first means for anchoring a spring;

a second plate rotatably disposed in said housing adjacent said first plate, having a second arcuate keyway for cooperating with said key means to allow limited rotation of said second plate with respect to said housing, two apertures for accepting prongs capable of alignment with the apertures of said first plate, and second means for anchoring a spring;

spring means cooperating with said first and second means for anchoring for rotatably urging said first and second plates to a first position in which the apertures of said first and second plates are not aligned;

an inner third plate fixed with respect to said housing adjacent said second plate, having a first pair of apertures for accepting prongs capable of alignment with the apertures of said second plate but being unaligned with the apertures of said second plate when said second plate is in said first position; and

two reciprocating detents extending from the surface of said third plate, each having a first end which extends into one of the apertures of said second plate when said second plate is in said first position, to prevent rotation of said second plate, whereby said first plate may be rotated against the bias of said spring means by prongs situated in the apertures of said first plate so that the apertures of said first plate become aligned with the apertures of said second plate, whereupon the ends of said reciprocal detents may be moved toward said third plate by the prongs and said first and second plates may be rotated with respect to said third plate by the prongs so that the apertures of said second plate are aligned with said first pair of apertures of said third plate, relative rotation between said second and third plates being prevented unless each of said detents is moved.

4,395,083

ELECTRICAL CONNECTOR HAVING REMOVABLE CONTACTS

David L. Frear, Afton, N.Y., assignor to The Bendix Corporation, Southfield, Mich.

Filed Jun. 30, 1981, Ser. No. 279,147

Int. Cl.³ H01R *13/42*

U.S. Cl. 339—59 R **10 Claims**

1. In combination with an electrical connector having removable contacts said connector of the type having: a housing; a plurality of contacts, each contact having a rear portion, a forward mating portion, and an annular groove between said forward and rear portions, and means for releasably mounting said contacts in said housing including an insert having a plurality of bores therein, each bore having therein a portion of a respective contact having the annular groove therein and a contact retention member, the improvement wherein said contact retention member comprises:

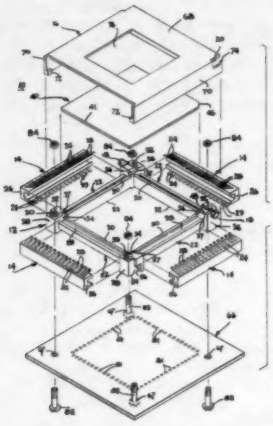
an arcuate segment having forward and rear ends, axially extending sides between said ends, one of said sides being radially deflectable, on the inside of said segment an inwardly projecting and radially tapered arcuate shoulder engaging the annular groove in a respective contact, said shoulder extending radially inward a greater distance at said deflectable side of said segment than at said other side, and on the outside of said segment, means, located adjacent said other side of said segment and between said ends thereof, for pivotally mounting to said insert the arcuate segment in each bore so that an axial side of said arcuate segment may be deflected radially outwardly to disengage the projecting shoulder from the groove in the contact whereby, a tool may be inserted into a bore in said insert to engage and pivot an axial side of said arcuate segment radially outwardly in said bore so that the projecting shoulder of said segment disengages from the groove in the contact thereby releasing the contact in said bore for removal from the connector.

4,395,084

ELECTRICAL SOCKET FOR LEADLESS INTEGRATED CIRCUIT PACKAGES

Richard A. Conrad, Vista, Calif., assignor to Teledyne Industries, Inc., Los Angeles, Calif.

Filed Jul. 6, 1981, Ser. No. 280,324
Int. Cl.³ H01R 23/72
U.S. Cl. 339—75 MP 7 Claims



1. A socket for making electrical connections to leadless integrated circuit packages comprising:

a frame having elongated, generally T-shaped sides where the center leg of each T is horizontally disposed and extends outwardly from the center of the frame;

contact assemblies, each corresponding to a respective side of the frame, where each assembly includes an elongated, generally C-shaped support having a vertical side, two resilient horizontal sides and an open end, and a plurality of parallel, spaced-apart, resilient, electrically conductive contacts embedded within, parallel to, and along the length of the vertical side of the C-shaped support; and

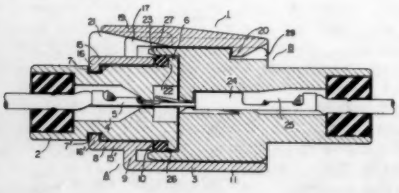
means for detachably mating the contact assemblies to the frame.

4,395,085

WATERPROOF CONNECTOR

Nori Inoue, Yokkaichi, Japan, assignor to Tokai Electric Wire Company Limited, Yokkaichi, Japan

Filed May 20, 1981, Ser. No. 265,689
Claims priority, application Japan, May 23, 1980, 55/71794[U]
Int. Cl.³ H01R 13/52
U.S. Cl. 339—94 R 1 Claim



1. A waterproof connector comprising:

a male housing part,

a female housing part adapted to fit on said male housing part, and

an "O" ring made of rubber or the like elastic material resiliently pressed between said housing parts,

said male housing part having a fitting portion constituted by an inner sleeve around which said "O" ring is wound and a large-diameter sleeve portion which is formed at a predetermined radial distance from said inner sleeve,

said female housing part having a cylindrical wall defining the opening for receiving said male housing part,

said cylindrical wall being fitted in the gap between said inner sleeve and said large-diameter sleeve portion of said male housing part,

said "O" ring being pressed between the outer peripheral surface of said inner sleeve and the inner peripheral surface of said cylindrical wall of said female housing part,

said male housing part includes said inner sleeve and an outer sleeve formed as separate bodies,

said inner sleeve having an annular protrusion formed on the outer periphery of one open end thereof,

said outer sleeve including said large-diameter sleeve and a small-diameter sleeve portion having an inside diameter substantially equal to the outside diameter of said inner sleeve and a thickness substantially equal to the projection length of said annular protrusion,

said large-diameter sleeve portion being connected to said small-diameter sleeve portion through an annular wall and being extended forwardly beyond an opening of said small-diameter sleeve portion with a predetermined radial distance from the latter, and

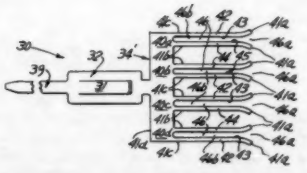
said male housing part being provided with an annular recess for receiving said "O" ring between said annular protrusion of said inner sleeve and said open end of said small-diameter sleeve portion of said outer sleeve.

4,395,086

ELECTRICAL CONTACT FOR ELECTRICAL CONNECTOR ASSEMBLY

Edward K. Marsh, Orlando, Fla., assignor to The Bendix Corporation, Southfield, Mich.

Filed Apr. 20, 1981, Ser. No. 255,600
Int. Cl.³ H01R 13/50
U.S. Cl. 339—176 M 16 Claims



1. An electrical contact for electrically interconnecting with a conductive blade, the contact characterized by a plurality of interconnected plate-portions (40) with each said plate-portion (40) having a lateral forward edge (41*a*) and a longitudinal slot (46) extending inwardly from the lateral forward edge, said slots (46) being aligned with one another and defining the axis of a single uninterrupted passage that extends through all the plate-portions, the plate-portions cooperating to form a common jaw for receiving the blade.

4,395,087

STRIP OF BORDER-HELD CONTACT ELEMENTS FOR A CONNECTION DEVICE, AND A PROCESS FOR FORMING SUCH CONTACT ELEMENTS

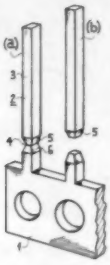
Paul Gorre, and Jean M. Giraud, both of Suresnes, France, assignors to Socapex, Suresnes, France

Filed Mar. 4, 1981, Ser. No. 240,482

Claims priority, application France, Mar. 7, 1980, 80 05203

Int. Cl.³ H01R 13/00

U.S. Cl. 339—278 R 3 Claims



1. In a strip of border-held contact elements for a connection device, comprising a support forming the border, in the form of a ribbon, and a plurality of contact elements in the form of rectangular-section rails, secured by one of their ends to one of the sides of the border by a securing means, in a comb arrangement, the border, the elements and their securing means being formed from the same continuous electrically conducting material, said securing means is formed by a bar disposed perpendicularly to the axis of the rail along two symmetrical wings, and a U-shaped stirrup whose base, which is common to the legs thereof, is supported by the border, the respective ends of the wings and of the legs being connected together and said bar having a triangular-shaped section whose apex is turned to face said common base.

4,395,088

COLOR SELECTIVE FILTERS

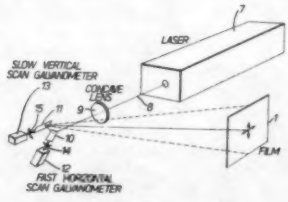
Kenneth Firth, Chelmsford, and Richard K. Howard, Witham, both of England, assignors to The Marconi Company Limited, Chelmsford, England

Filed Mar. 11, 1981, Ser. No. 242,610

Claims priority, application United Kingdom, Mar. 13, 1980, 8008564

Int. Cl.³ G03H 1/04, 1/26

U.S. Cl. 350—3.7 9 Claims



1. A method of making a colour selective filter in the form of a holographic reflector including the steps of: illuminating a photosensitive film with a beam of light from a coherent monochromatic laser in which the area of the beam spot on the film is small as compared with the total area of the film; moving the laser beam relative to the film so that each point on the area of the film is illuminated a large number of times and the total illumination received by each point is substantially constant; causing a wave derived from the illuminating beam to interfere with the illuminating beam; and developing the film so as to change the latent image thereon into a colour selective filter.

4,395,089

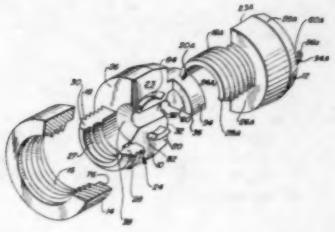
CLAMP CONSTRUCTION FOR USE IN OPTICAL FIBER CABLES

William H. McKee, West Covina, Calif., assignor to TRW Inc., Elk Grove Village, Ill.

Continuation-in-part of Ser. No. 943,153, Jun. 11, 1979. This application Jun. 16, 1980, Ser. No. 159,716

Int. Cl.³ G02B 7/26

U.S. Cl. 350—96.20 15 Claims



8. In combination, an optical fiber cable comprising concentric sheaths spaced apart by interposed, parallel strength members; an optical fiber element disposed in the innermost sheath and extending therefrom at one end; a clamp comprising clamp elements pivotally connected in a scissorlike manner and having spaced pairs of clamping jaws disposed at opposed clamp ends extending from a central clamp body portion, and clampingly engaging concentric elements of said cable; said jaws comprising opposed end portions of said clamp elements whereby said opposed pairs of jaws are simultaneously movable into cable gripping and releasing positions during pivotal movement of said clamp elements; the interval between the jaws in gripping position being such as to enable such jaws at said one end to securely engage the optical fiber cable outer sheath disposed therebetween; the interval between the clamping jaws at the opposed end in grippping position being such as to enable said jaws at said other end to securely engage said optical fiber element disposed therebetween; said clamp elements defining a passageway extending through said clamping jaws in which said cable is received; each clamp element having an arcuate recess and projecting lug formed in opposed relation on opposite sides of said passageway; the lug of each clamp element being received in the recess of the other clamp element and coacting therewith so as to define such pivotal connection between said clamp elements.

4,395,090

OPTICAL CUT-OFF FILTER

Hans F. Mahlein, Unterhaching, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Mar. 5, 1981, Ser. No. 240,868

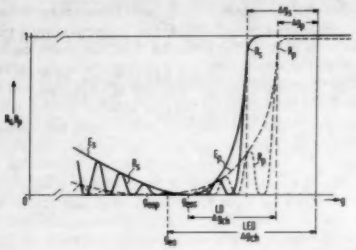
Claims priority, application Fed. Rep. of Germany, Mar. 25, 1980, 3011501

Int. Cl.³ G02B 5/28

U.S. Cl. 350—166 10 Claims

1. In an optical cut-off filter in the form of a multilayer system comprising a sequence of dielectric layers A and B interposed between a transparent bordering medium having an index of refraction n_0, and with an index of refraction n_A for each of the layers A and an index of refraction n_B for each of said layers B selected so that, for a preselected radiation angle of incidence θ, the pass band of the filter has an envelope E_1 of

the reflecting secondary maxima for the s-component vibrating perpendicular to the radiation plane of incidence and an envelope E_p for the p-component vibrating parallel to the radiation plane of incidence of the electrical field vector of the incident



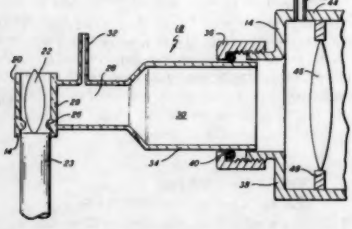
radiation, and wherein each envelope has a zero location, the improvement comprising having the indices of refraction n_A and n_B of the dielectric layers A and B of the filter selected so that the zero locations of the two envelopes E_s and E_p lie at somewhat different wavelengths.

4,395,091

OPTICAL COUPLING DEVICE FOR USE WITH A PLASMA EMISSION SPECTROMETER

Albert J. Russo, Norwalk, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Oct. 31, 1980, Ser. No. 202,511
Int. Cl.³ G01N *21/73*; G02B *5/00*
U.S. Cl. 350—319 **9 Claims**



1. An optical coupling device for use with a plasma emission spectrometer comprising:

a hollow optically transparent high temperature body, said body having a first segment and a second segment, said first and said second segments being axially aligned and affixed to each other;

means for gaseously sealing the end portions of said body;

means for venting said body whereby said device provides an oxygen-free optical path along said body; and

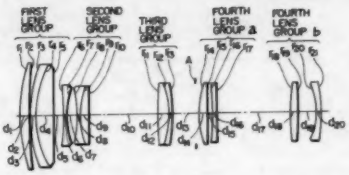
a hollow optically transparent high temperature tube integral with said first segment at the end thereof distal from said second segment, said tube being adapted to surround a plasma torch and align said body therewith.

4,395,092

COMPACT TELEPHOTO ZOOM LENS

Takayuki Itoh, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 4, 1981, Ser. No. 240,421
Claims priority, application Japan, Mar. 10, 1980, 55-30037
Int. Cl.³ G02B *15/14*
U.S. Cl. 350—427 **2 Claims**



1. A compact telephoto zoom lens comprising, in order from the object side, a variator system including a first lens group functioning as a focusing group having a positive focal length, a second lens group functioning as a main variator having a negative focal length, a third lens group functioning as a compensator for maintaining an image plane constant having a positive focal length, and a relay lens system, said first lens group including a positive meniscus lens convex on the object side and a positive cemented lens comprising a negative meniscus lens convex on the object side and a positive lens, said second lens group including a negative lens whose lens concave surfaces confront each other and a negative cemented lens comprising a biconcave lens and a positive lens, said third lens group including a positive cemented lens composed of a biconvex lens and a negative meniscus lens, said relay lens system including a fourth lens group a comprising a positive lens having a stronger convex surface on the object side and a biconcave negative lens and a fourth lens group b comprising a biconvex positive lens and a negative meniscus lens having a stronger concave surface on the object side, said fourth lens group b being disposed a predetermined distance from said fourth lens group a, said zoom lens satisfying the following conditions:

F No. 1:4.5 f = 82.0 ~ 195.0 ω = 15.2° ~ 6.2°

	LENS NO.	r	d	N	ν
FIRST LENS GROUP	1	87.373	3.95	1.51633	64.1
	2	284.393	0.10		
	3	69.120	2.30	1.80518	25.4
	4	46.684	8.05	1.48749	70.1
	5	−1885.831	4.409		
SECOND LENS GROUP	6	−161.880	1.70	1.69680	55.5
	7	46.010	4.45		
	8	−60.000	1.50	1.69680	55.5
	9	40.111	3.80	1.80518	25.4
	10	−1590.000	30.980		
THIRD LENS GROUP	11	114.300	5.00	1.58913	61.0
	12	−42.520	1.60	1.80518	25.4
	13	−83.000	11.897		
FOURTH LENS GROUP a	14	39.214	4.10	1.58913	61.0
	15	−2275.000	1.79		
	16	−269.221	2.10	1.80518	25.4
	17	269.221	32.87		
FOURTH LENS GROUP b	18	71.700	3.50	1.62588	35.7
	19	−265.000	8.45		
	20	−30.398	1.70	1.80610	40.9
	21	−79.717			

Variable Distance	f = 82.0	135.0	195.0
d_5	4.409	26.751	37.624
d_{10}	30.980	17.429	1.718
d_{13}	11.897	3.105	7.943

-continued

$f_{min}/f_I = 0.759$,
$f_{min}/f_{I\sim II} = -1.246$,
$f_{min}/f_{I\sim III} = -0.085$,
$f_{min}/f_{I\sim IVa} = 1.088$,
$f_{min}/f_{I\sim IVb1} = 1.920$,
$(n_{II1} + n_{II2})/2 = 1.6968$,
$r_{IVa1}/f_{min} = r_{14}/f_{min} = 0.478$,
$l_{IVaIVb}/f_{min} = d_{17}/f_{min} = 0.401$,
$l_{IVb2}/f_{min} = d_{19}/f_{min} = 0.103$,
$|r_{IVb3}|/f_{min} = |r_{20}|/f_{min} = 0.371$, and
$n_{IVb2} = 1.80610$,

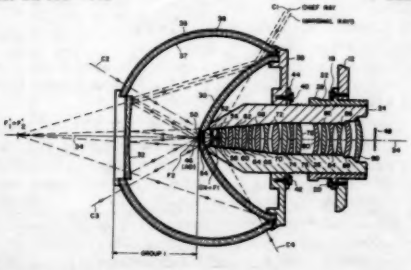
where:
f_{min} is the overall focal length of said zoom lens at a wide angle position thereof;
f_I is the focal length of said first lens group;
$f_{I\sim II}$ is the resultant focal length of said first and second lens groups at said wide angle position;
$f_{I\sim III}$ is the resultant focal length of said first, second and third lens groups at said wide angle position;
$f_{I\sim IVa}$ is the resultant focal length from said first lens group to said fourth lens group a at said wide angle position;
$f_{I\sim IVb1}$ is the resultant focal length from said first lens group to said positive lens of said fourth lens group b at said wide angle position;
n_{II1} is the refractive index of said first negative lens of said second lens group at the d-line thereof;
n_{II2} is the refractive index of said second negative lens of said second lens group at the d-line thereof;
r_{IVa1} is the radius of curvature of the first lens surface of said fourth lens group a;
l_{IVaIVb} is the distance between said fourth lens groups a and b;
l_{IVb2} is the distance between said positive lens and said negative meniscus lens of said fourth lens group b;
r_{IVb3} is the radius of curvature of the first lens surface of said negative meniscus lens of said fourth lens group b;
n_{IVb2} is the refractive index of said negative meniscus lens of said fourth lens group b at the d-line thereof;
f is the overall focal length;
ω is the half viewing angle of the designated lens;
r is the radius of curvature of the designated lens;
d is the lens thickness or distance between adjacent lenses;
N is the refractive index at the d-line; and
ν is the Abbe number.

4,395,093

LENS SYSTEM FOR PANORAMIC IMAGERY

Gottfried R. Rosendahl, and Wiley V. Dykes, both of Winter Park, Fla., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 21, 1981, Ser. No. 265,874
Int. Cl.³ G02B 13/06
U.S. Cl. 350—441 **7 Claims**



1. An optical system for 360° annular image transfer having mirror means positioned upon a predetermined optical axis so as to form an entrance pupil for said optical system adapted for passing therethrough chief rays and marginal rays of image forming light, and thereby reduce the vertical field angles of said chief rays and marginal rays of image forming light to a predetermined magnitude wherein the improvement comprises, in combination:

first lens means spatially disposed downstream from said mirror means on said optical axis for providing a positive power to correct for negative field curvature caused by said mirror means, and for bending the marginal rays of image forming light toward said optical axis and into a position approximately parallel to said optical axis, said first lens means having first and second negative lenses spatially disposed downstream from said mirror means on said optical axis, each negative lens of which has a low refractive index, and each negative lens of which is spaced for air cooling so as to prevent heat damage, and first, second, third and fourth positive lenses spatially disposed downstream from said second negative lens on said optical axis, each positive lens of which has a high refractive index, and each positive lens of which is spaced for air cooling so as to prevent heat damage;

second lens means spatially disposed downstream from said first lens means on said optical axis and having an overall power of zero for providing primary and secondary color correction;

third lens means spatially disposed downstream from said second lens means on said optical axis for bending the marginal rays of image forming light from the aforesaid position approximately parallel to said optical axis toward a predetermined image plane, and for providing additional field curvature correction and secondary color correction; and

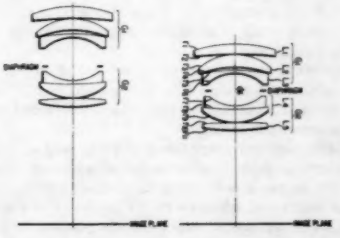
fourth lens means spatially disposed downstream from said third lens means on said optical axis for adding a positive Petzval curvature such that an image may be formed at said image plane, for bringing the chief rays of image forming light incident upon said image plane at a predetermined angle, and for providing additional field curvature correction and secondary color correction.

4,395,094

LARGE APERTURE RATIO PHOTOGRAPHIC LENS WITH MEANS FOR CORRECTING ABERRATIONS

Yoshinari Hamanishi, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Jan. 5, 1981, Ser. No. 222,539
Claims priority, application Japan, Jan. 31, 1980, 55/10703
The portion of the term of this patent subsequent to Apr. 7, 1998, has been disclaimed.
Int. Cl.³ G02B 9/62, 15/14
U.S. Cl. 350—467 **8 Claims**



1. In a large aperture ratio photographic lens with means for

correcting aberrations comprising a forward group including at least one negative lens and having a composite positive refractive power, a rearward group also including at least one negative lens and having a composite positive refractive power, and a diaphragm provided between said two groups, the improvement residing in that during the shift from an infinity object photography condition to a short distance object photography condition, focusing is effected by moving both of said two groups toward the object side while enlarging the diaphragm space between said two groups and that said photographic lens satisfies the following conditions:

$$2.4<f_1/f<4.5 \quad (1)$$

$$2.5<f_1/f_2<5.5 \quad (2)$$

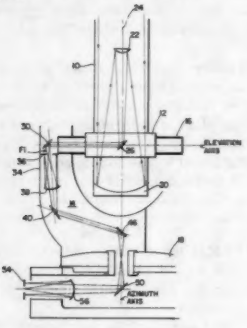
where f is the total focal length of the entire system during the infinity photography condition, f_1 is the focal length of said forward group, and f_2 is the focal length of said rearward group.

4,395,095

OPTICAL SYSTEM FOR INFRARED TRACKING

Richard F. Horton, Dunkirk, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 20, 1981, Ser. No. 265,273
Int. Cl.³ G02B *17/06, 23/06*
U.S. Cl. 350—504 **5 Claims**



1. An optical system for relaying a telescope image from a movable telescope by folding the bundle through a movable telescope mount to a fixed focal plane remote therefrom with improved imaging for off axis focusing comprising:

means folding the bundle out of the telescope optical axis and converging it to a focal point outside the telescope;

a first apertured flat mirror disposed around the bundle axis with its plane at an oblique angle thereto and containing the focal point;

a spherical concave mirror downbeam of an facing the first apertured flat mirror for folding the bundle back to the apertured flat mirror from which it is folded to a second apertured flat mirror;

said second aperatured flat mirror disposed around the bundle axis with its plane at an oblique angle thereto and folding the bundle to an ellipsoidal concave mirror;

said ellipsoidal concave mirror disposed downbeam of an facing the second apertured flat mirror for folding the bundle back to the second apertured flat mirror and converging it to focal points in the aperature thereof in the plane of the second aperture flat mirror;

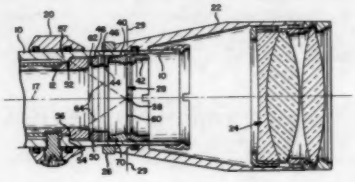
whereby aberrations caused by off-axis focusing of objects by the telescope are minimized in the periphery of the field at the focal plane.

4,395,096

VARIABLE MAGNIFICATION TELESCOPIC SIGHT HAVING RETICLE CENTERING MOUNT

Dale E. Gibson, Salem, Oreg., assignor to Leupold & Stevens, Inc., Beaverton, Oreg.

Filed Oct. 13, 1981, Ser. No. 311,001
Int. Cl.³ G02B *7/10, 27/32;* F41G *1/38*
U.S. Cl. 350—560 **20 Claims**



1. Reticle mounting apparatus for a telescopic sight, comprising:

a housing tube containing lenses supported in axial alignment along an optical axis;

a reticle mounting ring secured within said tube;

a reticle sight means attached to said mounting ring and providing a sight point; and

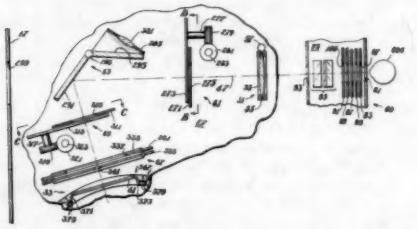
a reticle centering sleeve provided around said mounting ring, said sleeve having a longitudinal cross-section of tapered shape which is wedged between said tube and said mounting ring to center the sight point on said optical axis.

4,395,097

COMPACT REFRACTION INSTRUMENT

Richard C. Mohrman, Rochester, N.Y., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.

Filed Aug. 11, 1980, Ser. No. 177,144
Int. Cl.³ A61B *3/02*
U.S. Cl. 351—201 **5 Claims**



1. A refraction instrument comprising:

(a) housing means;

(b) target means supported by said housing means, said target means including at least one binocular target having first and second halves;

(c) first and second optical means, supported by said housing means, for making said target means appear at or near infinity when said target means is viewed through said optical means, said optical means and said target means defining a pair of optical paths;

(d) first and second sets of corrective optics for emulating a series of ophthalmic prescriptions, said corrective optics supported relative to said housing means in optical alignment with said optical means;

(e) means, supported by said housing means and interposed along said optical paths between said optical means and said target means, for separating said optical paths so as to

provide separate and independent views of said halves of said binocular target;

(f) means, supported by said housing means, for suppressing accommodation; and

(g) apparatus, supported by said housing means between said optical means and said target means, for permitting retinoscopic examination through at least one of said first and second optical means and one of said sets of corrective optics while simultaneously maintaining a view of at least one of said halves of said binocular target through at least the other of said first and second optical means and other of said sets of corrective optics.

4,395,098

SHUTTER TIME CONTROL CIRCUIT

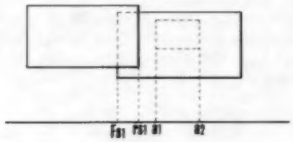
Masanori Uchidoi, Yokohama, and Kazunobu Urushihara, Inagi, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

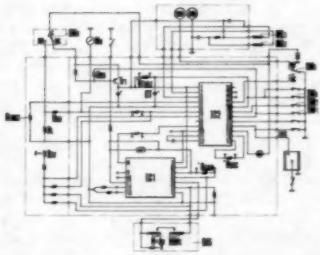
Continuation of Ser. No. 147,268, Feb. 5, 1980, abandoned. This application Oct. 7, 1981, Ser. No. 309,385

Claims priority, application Japan, May 8, 1979, 54-56541

Int. Cl.³ G03B 7/08

U.S. Cl. 354—23 D **5 Claims**





1. A shutter control circuit for a shutter having a mechanical condition producing a delay, comprising:

(a) a counter circuit for counting pulses when a shutter release operation is performed;

(b) a shutter time information circuit for producing a digital value corresponding to an exposure time;

(c) preset means having impedance means for adjustably presetting time information corresponding to a mechanical condition of the shutter mechanism;

(d) converting means for converting the time information preset by said impedance means into a digital value;

(e) a shutter time information setting circuit including a first part coupled to said shutter time information circuit for setting said digital value from the shutter time information circuit and a second part coupled to said converting means for setting said digital value from the converting means;

(f) a shutter time control circuit coupled to said counter circuit and the first and second parts of said shutter time information setting circuit, said shutter time control circuit forming a shutter closing signal when the value counted by said counter circuit has assumed a value corresponding to the sum of the digital values set by said first and second parts of the shutter time information setting circuit; and

(g) shutter control means for closing the shutter in response to the closing signal.

4,395,099

SCENE BRIGHTNESS MEASURING SYSTEM

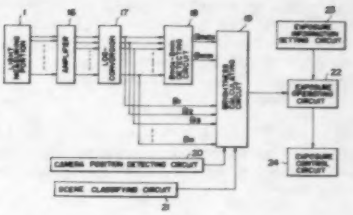
Takaaki Terasita, Minami-ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 4, 1981, Ser. No. 260,410

Claims priority, application Japan, May 2, 1980, 55/58820

Int. Cl.³ G03B 7/097, 7/099

U.S. Cl. 354—31 **13 Claims**



1. A method of determining the correct exposure for photographing a scene in which n various parts thereof have differing amounts of illumination comprising the steps of measuring respective brightness values B_i, where $i=1, 2, 3, \ldots n$, for said n various parts of said scene with respective photosensitive devices sensitive to the brightness of associated ones of said parts; determining the maximum brightness value B_{max} and the minimum brightness value B_{min} from among the measured brightness values B_i; automatically assigning weighting factors K_1, K_2, K_3, $K(i+3)$, and α for said brightness values B_{max}, B_{min}, and B_i; electronically computing the correct scene brightness B according to the following formula:

$$B = K_1 + K_2 \cdot B_{max} + K_3 \cdot B_{min} + \alpha \sum_{i=1}^{n} K(i+3) \cdot B_i$$

and automatically adjusting the camera exposure for photographing said scene in accordance with the calculated scene brightness B.

4,395,100

ILLUMINATION MODE SWITCHING CIRCUIT FOR AUTOMATIC ELECTRONIC FLASH

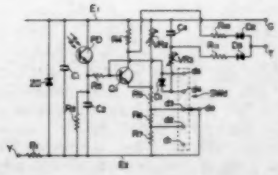
Isao Kondo, Hachioji, Japan, assignor to Olympus Optical Company Ltd., Tokyo, Japan

Continuation of Ser. No. 173,051, Jul. 28, 1980, abandoned. This application Jun. 16, 1982, Ser. No. 389,039

Claims priority, application Japan, Sep. 5, 1979, 54-114672

Int. Cl.³ G03B 7/16

U.S. Cl. 354—33 **11 Claims**



1. An illumination mode switching circuit for an automatic

electronic flash which permits a selection among an automatic illustration control mode in which the emission of flashlight from a flash discharge tube is interrupted in response to an output from a photometric integrating circuit including a photoelectric transducer element, a manual illumination control mode in which the emission of flashlight from the flash discharge tube is interrupted with a time constant which is determined by a time constant circuit, and a full illumination mode in which a full emission of flashlight from the flash discharge tube is permitted; characterized by the provision of an illumination mode selecting changeover switch having a first terminal connected to an automatic illumination control level presetting circuit for selecting an automatic illumination control level, a second terminal for a manual illumination control which is connected to the time constant circuit and a third terminal for full emission which is connected to the photometric integrating circuit, and an isolation diode connected between the second and the third terminal, the arrangement being such that whenever the changeover switch is thrown to the second terminal, the photometric integrating circuit is disabled through the isolation diode while the time constant circuit is enabled to thereby select the manual illumination control mode, while whenever the changeover switch is thrown to its third terminal, the photometric integrating circuit is disabled and the time constant circuit is also disabled by the isolation diode to thereby select a full illumination mode.

4,395,101

APPARATUS FOR PRESETTING PHOTOGRAPHING DISTANCE FOR CAMERA

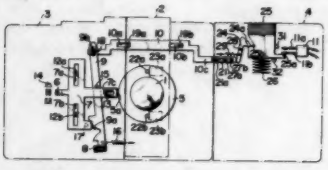
Ichiro Morimoto, Hachioji, Japan, assignor to Olympus Optical Company Ltd., Tokyo, Japan

Filed Oct. 5, 1981, Ser. No. 308,476

Claims priority, application Japan, Nov. 14, 1980, 55-162958[U]

Int. Cl.³ G03B *3/02, 15/05*

U.S. Cl. 354—128 **7 Claims**



1. An apparatus for presetting the photographing distance for a camera which includes means for adjusting the photographing distance by causing a movement of a taking lens in the direction of an optical axis and means for establishing a normally focussed position of the taking lens in response to the closure of a lens protective cover which opens or closes the front surface of the taking lens; the apparatus comprising:

switch operating means disposed on an electronic flash which is internally housed within or which is detachably mounted on the camera for turning on or off a power switch of the electronic flash;

flash photography operating means for operating the switch operating means in a direction to turn the power switch on;

interlock means responsive to a movement of the flash photography operating means to operate said means for adjusting the photographing distance to bring the taking lens to a flash photography position which is located on the nearer side than the normally focussed position; and

said switch operating means including an indicator member having a lamp for indicating the completion of a charging operation within said electronic flash; said indicator member being movable between a position in which it projects outwardly of said electronic flash and in which said power switch is turned on, and another position retracted within said electronic flash and in which said power switch is turned off.

4,395,102

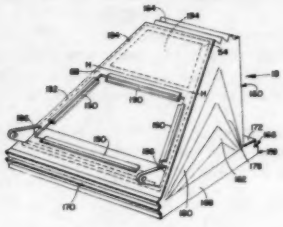
BELLOWS FOR FOLDING CAMERA

Donato F. Pizzuti, Lynnfield, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 28, 1981, Ser. No. 334,982

Int. Cl.³ G03B *17/04*

U.S. Cl. 354—187 **7 Claims**



1. A folding bellows for light shielding the exposure optical path in a folding camera of the type including a base housing section having a film plane therein, a lens housing section mounting an objective lens and being pivotally coupled to the base section, adjacent one end of the film plane, for movement between an upstanding operative erected position and a storage position folded back over the base section so as to overlie at least a portion of the film plane, and a mirror assembly including a mirror pivotally coupled to the base section, adjacent an opposite end of the film plane, for coordinated movement with the lens housing section between an erected position for reflecting image forming light rays transmitted by the lens onto the film plane to expose a film unit thereat and a folded storage position overlying at least a portion of the film plane with at least a portion of the mirror located between the film plane and the lens housing section located in its folded position, said bellows being formed of a thin, flexible, light opaque material and comprising:

a bottom section attached to the base housing section in surrounding relation to the film plane;

a forward wall joined to a leading end of said bottom section and being attached to a rear wall of the lens housing section, said forward wall having an opening therein aligned with said lens through which image forming light rays are transmitted into the interior of said bellows;

a rear wall joined to a trailing end of said bottom section and configured to overlie a back side of the mirror when said bellows and mirror are erected, said rear wall including lower section thereof that is attached to a facing portion of the mirror, and an upper section thereof that is not attached to that portion of the mirror facing said upper section;

a pair of oppositely spaced side walls, each of said side walls extending between a corresponding side portion of said bottom section and adjacent ends of said forward and rear walls;

an extensible top wall joining adjacent upper ends of said forward, rear and side walls, said top wall being movable between retracted and extended positions;

said bellows being movable in response to corresponding movement of the lens housing section and mirror assembly between an erected position, wherein said upper and lower sections of said rear wall are in substantially coplanar relation overlying the back side of the erected mirror, said top wall is in its said retracted position and said bellows forms at least a portion of an ambient light excluding exposure chamber surrounding the exposure optical path

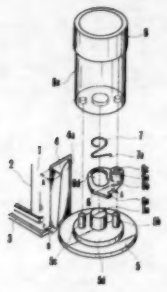
extending between the lens, mirror and film plane, and a substantially flat folded storage position overlying at least a portion of the film plane wherein said upper section of said rear wall is folded back over its lower section and said top wall is in its said extended position.

4,395,103

FILM WINDING DEVICE FOR CAMERA

Nobuo Tezuka, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 16, 1981, Ser. No. 283,883
Claims priority, application Japan, Jul. 22, 1980, 55-100080
Int. Cl.³ G03B 1/04
U.S. Cl. 354—212 **6 Claims**



1. A camera having a film winding mechanism, comprising:
a spool for winding film thereon;
an engagement member having a guide groove into which a rotation shaft of the spool is engaged and having an engaging portion at its end, said engagement member being engaged at a predetermined position on a circle coaxial to the rotating shaft within the circumference of the spool, and rotatable around said predetermined position within a range defined by the contact of the guide groove wall against the rotation shaft of the spool; and
an elastic member for urging the engagement member outwardly out of the circumferential surface of the spool, whereby when the film is engaged at its perforation with the engaging portion and wound, the engagement member is moved by the tension of the film against the urging force of the spring to a position where it is restricted by the contact of the rotation shaft against the guide groove wall, the shape of the guide groove being designed so as to allow the projection of the engaging portion out of spool circumference to be slightly larger than the base thickness of the film.

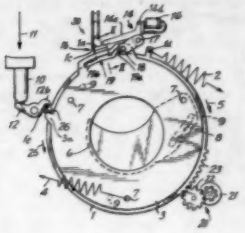
4,395,104

ELECTRICALLY PROGRAMMED SHUTTER ASSEMBLY

Karl-Heinz Lange, Bunde, Fed. Rep. of Germany, assignor to Balda-Werke Photographische Gerate und Kunststoff GmbH & Co., KG, Bunde, Fed. Rep. of Germany

Filed Sep. 11, 1981, Ser. No. 301,339
Claims priority, application Fed. Rep. of Germany, Sep. 11, 1980, 3034214
Int. Cl.³ G03B 9/24
U.S. Cl. 354—230 **8 Claims**

1. An electronically controlled programmed shutter assembly for a camera for insuring a predetermined minimum lens opening comprising:
an opening ring biased for rotation in a first rotational direction;
a closing ring mounted adjacent to said opening ring and biased for rotation in the first rotational direction;
shutter blades mounted on one of the opening and closing rings, the blades opening in response to rotation of the opening ring in the first rotational direction with respect to the closing ring and closing in response to rotation of the closing ring in the first rotational direction with response to the opening ring; and
electromagnetic means for holding said closing ring in the first rotational direction; said opening ring including holding means restricting rotation of the closing ring until the opening ring has traveled a predetermined distance, said holding means operatively engaged with the electromagnet means for insuring a predetermined minimal opening of the shutter blades for providing a minimum lens aperature by releasing said closing ring only after said opening ring has been displaced a predetermined distance.

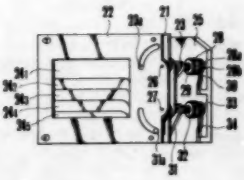


4,395,105

DEVICE FOR ADJUSTING DRIVING SPRING OF FOCAL PLANE SHUTTER

Michio Senuma, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 31, 1981, Ser. No. 336,497
Claims priority, application Japan, Jan. 13, 1981, 56-3160
Int. Cl.³ G03B 9/40
U.S. Cl. 354—246 **4 Claims**

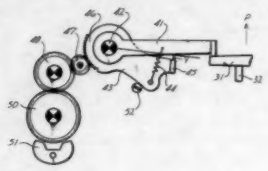


1. A shutter mechanism including a shutter, a shutter driving spring and an adjusting device for adjusting said shutter driving spring, comprising:
a ratchet wheel capable of adjusting the driving force of said shutter driving spring, said ratchet wheel consisting of a ratchet part which has fine teeth and a gear part which has relatively coarse teeth, said gear part being arranged to engage the gear of an automatic adjuster; and
a ratchet pawl which keeps the ratchet wheel stationary by engaging the teeth of the ratchet part, said ratchet pawl being arranged to be disengaged from one of the teeth of the ratchet part and to come into engagement with another tooth of the ratchet part to consequently have the driving force of said spring adjusted when the automatic adjuster is actuated with the gear thereof engaged with said gear part of the ratchet wheel.

4,395,106
COMPENSATION FOR DIAPHRAGM CONTROL IN SLR CAMERA

Masahiro Kawasaki, Tokyo; Zenichi Okura, Ichikawa, and Fumio Urano, Omiya, all of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 9, 1981, Ser. No. 300,683
Claims priority, application Japan, Sep. 11, 1980, 55-126782
Int. Cl.³ G03B 7/20
U.S. Cl. 354—271 4 Claims

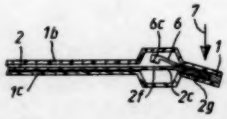


1. A camera comprising:
a first displaceable actuator;
a second displaceable actuator;
a diaphragm adjustable between a maximum aperture value and a minimum aperture value responsive to displacement of the second actuator;
means for generating a first signal representative of the displacement of the first actuator;
means for generating a second signal representative of the desired aperture value of the diaphragm for correct exposure;
means for comparing the first and second signals;
means for displacing the first actuator upon shutter release;
means for maintaining the second actuator stationary during an initial portion of the displacement of the first actuator and displacing the actuators as a unit during the remainder of the displacement of the first actuator; and
means responsive to the comparing means for arresting displacement of the actuators when the first and second signals assume a predetermined relationship.

4,395,107
FILM CASSETTE

Hermann Lührig, Leverkusen; Franz Hoffacker, Langenfeld; Guido Kovacic, Unkel; Dieter Engelsmann, Unterhaching; Siegfried Zobel, Munich; Hubert Hackenberg, Holzkirchen, and Karl Wagner, Munich, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert AG, Leverkusen, Fed. Rep. of Germany

Filed May 15, 1981, Ser. No. 264,668
Claims priority, application Fed. Rep. of Germany, May 22, 1980, 3019664
Int. Cl.³ G03B 17/26, 1/04
U.S. Cl. 354—275 35 Claims

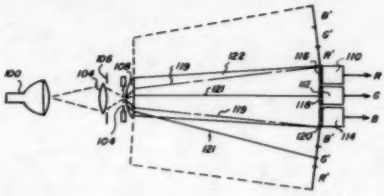


13. A film cassette for multi-exposure film strips, comprising a body part having an inner compartment for a film strip, and at least one opening for passage of the film strip therethrough between an initial position before exposure and a final position after exposure of the film strip; and means for preventing unintentional withdrawal of the film strip from said body part in each of said positions, said preventing means being arranged releasable by a disconnecting element of a camera and located between said body part and the film strip inside said body part.

4,395,108
COLOR BALANCED SCRATCH SUPPRESSING PROJECTION APPARATUS FOR COLOR TRANSPARENCIES

John E. Morse, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 12, 1982, Ser. No. 348,383
Int. Cl.³ G03B 27/00; G02B 5/14
U.S. Cl. 355—1 9 Claims

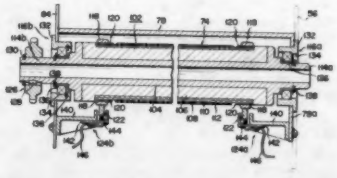


1. In apparatus for projecting color transparencies, a color balanced scratch suppressing optical arrangement comprising:
an objective lens having a rectangular aperture and defining first and second conjugate planes;
a rectangular light integrating bar having a first end face adjacent said first conjugate plane and a second end face;
means for defining a plurality of color regions on the second end face of said bar; and
a condenser lens disposed between said first conjugate plane and said first end face of said integrating bar, said condenser lens being constructed and located with respect to said second end face to form an image of said rectangular aperture at the plane of said second end face, the linear dimensions of said image being an even multiple of the corresponding dimensions of said second end face.

4,395,109
FIXING DEVICE FOR ELECTRONIC DUPLICATOR MACHINE

Shunichi Nakajima, Yokohama, and Hiroshi Odaira, Chigasaki, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jun. 5, 1980, Ser. No. 156,866
Claims priority, application Japan, Jun. 11, 1979, 54-73325; Jun. 11, 1979, 54-73326; Jun. 11, 1979, 54-73327; Jun. 11, 1979, 54-73328; Jun. 11, 1979, 54-73329; Jun. 11, 1979, 54-73330; Jun. 11, 1979, 54-73331
Int. Cl.³ G03G 15/20
U.S. Cl. 355—3 FU 8 Claims



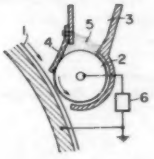
1. A fixing device for an electronic duplicator machine for heating toner attracted to copying paper and for fixing the toner onto the copying paper, said fixing device comprising:
a rotatable heat generating roller which includes:
(a) a hollow cylindrical body journally supported at each end for rotation about its elongated axis;

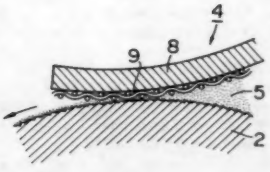
(b) a heat insulating layer formed on the outer circumferential surface of said hollow cylindrical body for preventing heat transmission to said hollow cylindrical body;
(c) a heat generating layer covering said heat insulating layer and including an electrically resistive layer through which electric current flows to generate heat and an electrically insulating layer disposed between said electrically resistive and said heat insulating layers, and
(d) conducting means including a first group of conducting members circumferentially disposed at regular intervals on one end portion of said electrically resistive layer and a second group of conducting members circumferentially disposed at regular intervals on the other end portion of said electrically resistive layer;
power supply means including a first terminal and a second terminal each having a fixed position relative to said rotatable heat generating roller and being connected to a power source, said first and second terminals respectively contacting a predetermined number of said conducting members of said first group and a predetermined number of said conducting members of said second group as said heat generating roller rotates relative thereto so as to preferentially heat that portion of the electrically resistive layer which lies between said predetermined number of conducting members of said first group in contact with said first terminal and said predetermined number of conducting members of said second group in contact with said second terminal; and
a supporting roller disposed parallel to said heat generating roller to support the copying paper in a contacting relationship with said heat generating roller, said supporting roller including a nip area in contact with said preferentially heated portion of said electrically resistive layer.

4,395,110
DEVELOPING DEVICE WITH APPLICATOR CONTOURED TO STIR DEVELOPER APPLIED TO A DEVELOPER SUPPORT

Nagao Hosono, Chofu, and Hatsuo Tajima, Matsudo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 26, 1981, Ser. No. 238,633
Claims priority, application Japan, Mar. 4, 1980, 55-27730; Mar. 4, 1980, 55-27731
Int. Cl.³ G03G *15/08*
U.S. Cl. 355—3 DD **12 Claims**



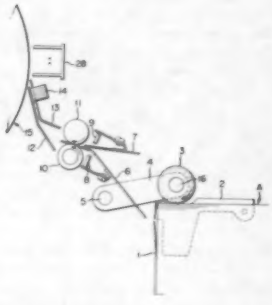


1. A developing device for developing a latent image formed on a latent image bearing member with a developer, comprising:
developer support means positioned with a small clearance between it and said latent image bearing member;
developer supply means for supplying the developer to said developer support means; and
applying means for applying the developer supplied by said developer supply means onto the surface of said developer support means and for defining the thickness of a layer of the developer on said developer support means;
said applying means being positioned in the proximity of or in contact with said developer support means, and comprising a screen provided with surface irregularities at least on a surface thereof facing said developer support means and a pressing member for pressing said screen against said developer support means.

4,395,111
SHEET CONVEYING DEVICE

Yuji Takahashi, Tokyo, and Hisaji Masaki, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 26, 1981, Ser. No. 296,257
Claims priority, application Japan, Aug. 28, 1980, 55/118612; Aug. 28, 1980, 55/118613
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—14 R **22 Claims**



1. A conveying device, comprising:
(a) a sheet conveying pathway;
(b) sheet conveying means for conveying a sheet along said conveying pathway;
(c) abnormal feed detection means for detecting that the sheet is abnormally conveyed along said conveying pathway;
(d) jam detection means for detecting sheet jamming, said detection means being provided on one part of said conveying pathway at a position downstream of said abnormal feed detection means; and
(e) control means for delaying a jam check timing by said jam detection means for a predetermined time when abnormal feeding is detected by said abnormal feed detection means.

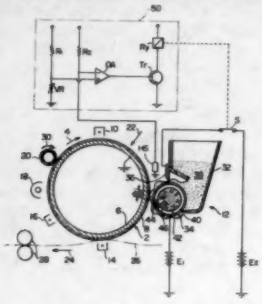
4,395,112
LATENT ELECTROSTATIC IMAGE DEVELOPING DEVICE

Nobuhiro Miyakawa, Suita; Kiyoshi Shibata, Osaka; Toshio Watanabe, Takatsuki, and Yosuke Ohata, Habikino, all of Japan, assignors to Mita Industrial Co., Ltd., Japan

Filed Sep. 9, 1981, Ser. No. 300,525
Claims priority, application Japan, Sep. 19, 1980, 55-131073
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—14 D **4 Claims**

1. In a latent electrostatic image developing device for developing a latent electrostatic image formed on an image-bearing member by applying a developer thereto, said developing device comprising developer applicator means for holding

developer on the surface thereof, carrying the developer to a developing zone and applying it to a latent electrostatic image in the developing zone and bias voltage applying means for applying a bias voltage to the developer held on the surface of the developer applicator means; the improvement wherein the bias voltage applying means comprises a first dc fixed voltage supply and a second dc fixed voltage supply and wherein the developing device further includes detector means for detecting the relative humidity of the environmental atmosphere and



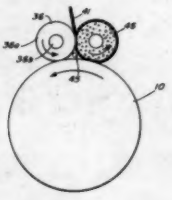
control means for connecting both the first and the second dc fixed voltage supplies to the developer held on the developer applicator means to adjust the applied bias voltage to a first value when the detected relative humidity is less than a predetermined value, and connecting only the first dc fixed voltage supply to the developer held on the developer applicator means to adjust the applied bias voltage to a second value less than the first value when the detected relative humidity exceeds the predetermined value.

4,395,113

METHODS AND APPARATUS FOR CLEANING PHOTOCONDUCTIVE MEMBERS

William R. Buchan, Pepperell, and Eddie W. Cielakie, Westford, both of Mass., assignors to Nashua Corporation, Nashua, N.H.

Filed Oct. 29, 1981, Ser. No. 316,285
Int. Cl.³ G03G *21/00*
U.S. Cl. 355—15 **8 Claims**



3. A method of cleaning a photoconductive surface comprising:

providing elastically yieldable roller means having a smooth, yieldable periphery adjacent the periphery of a photoconductive surface;

moving said photoconductive surface so as to carry a layer of developer, comprising toner particles dispersed in a gelatex dispersant, generally toward said yieldable roller means;

applying a lubricating liquid to said developer layer;

pressing said yieldable roller means against said developer layer with its axes being parallel to said photoconductive surface and with

the smooth yieldable periphery of said elastically, yieldable roller means being arcuately deformed into concave, smooth faced pad means penetrating said developer layer to a depth such that said concave smooth faced pad means is generally spaced from said photoconductive surface by a distance not exceeding the diameter of the minimum sized particles of said toner;

rotating said elastically yieldable roller means so that its periphery moves at a speed at least equal to the speed of said moving photoconductive surface but in a direction opposite thereto, with

said rotation being operable to apply a shearing force to said gelatex dispersant operable to reduce the viscosity thereof;

maintaining a gap between said concave, smooth faced, pad means and said photoconductive surface, with said gap having a thickness not exceeding the diameter of said minimum sized toner particles; and

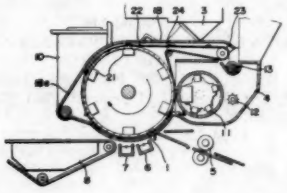
applying doctor blade means to the periphery of said rotating, elastically yieldable roller means to remove toner particles therefrom.

4,395,114

TONER RECOVERY DEVICE

Hiroaki Ura, Kunitachi; Tsugio Hirabayashi, and Junichi Koiso, both of Hachioji, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Dec. 22, 1981, Ser. No. 333,623
Claims priority, application Japan, Dec. 26, 1980, 55/183882; Dec. 26, 1980, 55/183883
Int. Cl.³ G03G *15/00, 15/08*
U.S. Cl. 355—15 **9 Claims**



1. In a toner recovery device in which a non-magnetic rotary member positioned coaxially with, and adjacent to, a charge receptor and having magnets embedded around the circumferential surface thereof is rotated and an endless belt wound on said rotary member is moved so as to recover a toner collected by a cleaning device into a developing unit, the improvement wherein a plurality of protuberances are equidistantly and projectingly formed around the circumferential surface of said rotary member to prevent said endless belt from floating as a whole, and said protuberances drive said endless belt.

4,395,115

CONVEYOR UNIT FOR BOOK CARRIER IN ELECTRO-PHOTOGRAPHIC COPYING MACHINES

Hiroshi Tsuda, Mitaka; Kiyoshi Miyashita, Hachioji; Akira Shimizu, Hachioji; Masaji Nishikawa, Hachioji, and Muneo Kasuga, Hachioji, all of Japan, assignors to Olympus Optical Co. Ltd., Tokyo, Japan

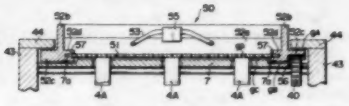
Filed Aug. 14, 1980, Ser. No. 178,169
Claims priority, application Japan, Sep. 27, 1979, 54-124886
The portion of the term of this patent subsequent to May 26, 1998, has been disclaimed.
Int. Cl.³ G03B *27/62*
U.S. Cl. 355—25 **14 Claims**

1. A conveyor unit in an electrophotographic copying machine for selectively conveying either a thin original or an original having substantial thickness, such as a book, to an exposure station to form an electrostatic latent image of said original for a copying purpose, comprising:

a book carrier including a frame having a transparent central portion on which said original having substantial thickness is placed to be conveyed to said exposure station;

a driven member formed on said book carrier for conveying it;

first and second commonly driven drive members on said unit respectively engageable with said thin original and said driven member for respectively driving said thin original and said carrier; and



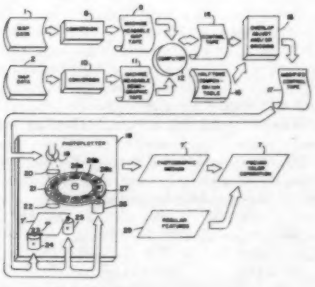
a rigid, stationary carrier retainer plate on said unit for maintaining a slight clearance with respect to the upper surface of the frame of said book carrier to constrain said book carrier from shifting upward as said drive member cooperates with said driven member while providing sufficient clearance to facilitate simple and rapid insertion and/or removal of the book carrier from the conveyor unit.

4,395,116

ARTWORK GENERATION APPARATUS AND PROCESS FOR CHARTS

Charles R. Patton, III, 895 Palo Verde, Long Beach, Calif. 90815, and Douglas E. Lippincott, 7861 Harbay, Midway City, Calif. 92655

Filed Jan. 22, 1981, Ser. No. 227,215
Int. Cl.³ G03B *27/32, 41/00*
U.S. Cl. 355—32 **17 Claims**



1. A method for preparing artwork for charts from predetermined data depicting type of information and associated location for application to a chart, comprising the steps of:

establishing relative movement between a image receiving medium and an imaging source of an imaging station in accordance with said data to establish said locations sequentially;

providing a plurality of different symbols of halftone patterns useful for making apparent said type information at said station;

selecting from said plurality, the symbol to be imaged onto said medium in accordance with said type of information data; and

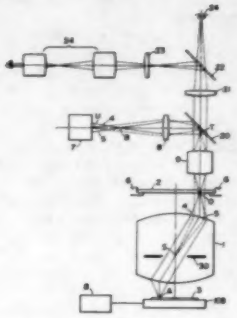
flashing the selected symbol onto said medium at the associated location.

4,395,117

PRINTING APPARATUS HAVING AN IN-FOCUS DETECTOR

Akiyoshi Suzuki, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 10, 1981, Ser. No. 242,349
Claims priority, application Japan, Mar. 18, 1980, 55-34376
Int. Cl.³ G03B *27/52, 27/70*
U.S. Cl. 355—43 **4 Claims**



1. A printing apparatus having an in-focus detector, comprising:

a mask carrier for supporting a mask thereon;

a wafer carrier for supporting a wafer thereon;

an imaging optical system for projecting the image of the mask onto the wafer;

an optical system for directing to the wafer through said imaging optical system a detection light having a predetermined inclination with respect to the optical axis of said imaging optical system; and

means for observing therethrough the position of the reflected detection light from the wafer;

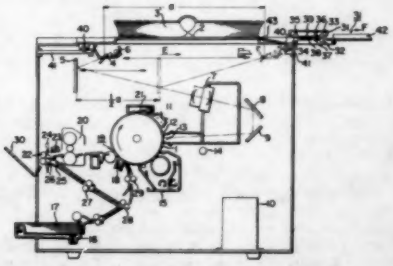
whereby in-focus condition may be detected depending on whether or not the position of said detection light is a predetermined position.

4,395,118

COPYING APPARATUS

Shigehiro Komori, and Masaru Yamaguchi, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 46,627, Jun. 8, 1979, abandoned, which is a continuation of Ser. No. 748,396, Dec. 7, 1976, abandoned, which is a continuation of Ser. No. 556,201, Mar. 7, 1975, abandoned. This application Feb. 11, 1982, Ser. No. 347,784
Claims priority, application Japan, Mar. 12, 1974, 49-28361
Int. Cl.³ G03B *27/62*
U.S. Cl. 355—75 **2 Claims**



1. A copying apparatus comprising:

an original holder having a holding surface for supporting a thick original for exposure;

sheet original transport means having at least two pairs of rollers, said apparatus further comprising an exposure station disposed between said pairs of rollers and provided independently from said original holder at a position contiguous thereto, said original holder and said sheet original transport means being integrally connected, wherein a sheet original is scanned while being fed by said transport means past said exposure station toward said thick original holding surface;

movable optical means having a scanning range for scanning an image of a thick original supported on said holding surface, said optical means being movable substantially within the scanning range, wherein said movable optical means scans the thick original while moving toward said sheet original transport means;

mode selecting means for moving said original holder between a first position wherein said exposure station of the sheet original is within said scanning range for the thick original to allow exposure operations for sheet originals substantially within said scanning range, and a second position wherein said exposure station of the sheet original is out of said scanning range;

copy processing means for producing on copy material an image of an original image scanned by said optical means;

a frame for integrally supporting said original holder and said sheet original transport means; and

a guiding member for moving said original holder and sheet original transport means together with said frame through a distance substantially corresponding to the distance between said exposure station and a contiguous end of said holder surface, wherein the scanning distance for thick originals corresponds to the length of the holder surface.

4,395,119

METHOD FOR AUTOMATIC, NON-DESTRUCTIVE MEASUREMENT OF ECCENTRICITY OF COATED ELECTRODES

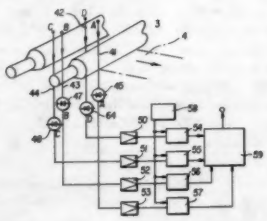
Kazuo Nakata, Fujisawa; Akihiko Iochi, Odawara; Isamu Kaise, Fujisawa; Kazuo Takeuchi, and Katsuhiko Nomura, both of Kamakura, all of Japan, assignors to Kobe Steel, Limited, Kobe, Japan

Filed Oct. 30, 1980, Ser. No. 202,240

Claims priority, application Japan, Nov. 8, 1979, 54-144996

Int. Cl.³ G01N *21/88;* G01B *11/02*

U.S. Cl. 356—73 **8 Claims**



1. A method for automatic, non-destructive measurement of eccentricity of a core wire located within a coating composition of a coated electrode by the use of optical means, comprising:

moving, in a direction substantially transverse to the axis thereof, at least one coated electrode having an exposed core wire portion;

providing at least two paired optical detecting means each having a light source for projecting a light beam toward a coated electrode on one side of the coated electrode and a signal generator located on the other side of said coated electrode to generate signals according to the intensity of incident light, positioning at least one of said detecting means to measure the diameter and location of said exposed portion of said core wire and positioning at least one of the remaining detecting means at a point spaced from said one of said detecting means in the axial direction of said wire to measure the diameter and location said coating of said coated electrode; and

processing the signals from said signal generators by an arithmetic means to measure the eccentricity of said coated electrode.

4,395,120

METHOD OF AND APPARATUS FOR MEASURING THE REFRACTIVE POWER OF A CONTACT LENS

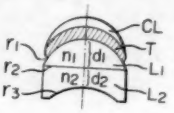
Fumio Takahashi, Yokohama, Japan, assignor to Nippon Kogaku K.K., Toyko, Japan

Continuation of Ser. No. 954,207, Oct. 24, 1978, abandoned. This application Feb. 3, 1981, Ser. No. 231,029

Claims priority, application Japan, Sep. 1, 1977, 52-104191; Oct. 28, 1977, 52-128628; Oct. 13, 1978, 53-12589

Int. Cl.³ G01B *9/00*

U.S. Cl. 356—125 **19 Claims**



1. A method of measuring the refractive power of a contact lens comprising:

combining a reference lens system of small refractive power the refractive elements of which are known with a contact lens to be inspected;

measuring the back focal distance of the combined optical system of the reference lens system and the contact lens combined together, namely, the distance from the vertex of the last refractive surface of the lens to the focus thereof; and

determining the refractive power of the contact lens from the value of said back focal distance and the known value of said reference lens system.

4,395,121

APPARATUS FOR DETERMINING THE ANGULAR POSITION OF A TARGET ILLUMINATED BY LIGHT PULSES

Pierre Nory, Orsay, and Guy Ripart, Le-Plessis-Robinson, both of France, assignors to Societe Anonyme dite: Compagnie Industrielle des Lasers, Marcoussis, France

Filed Feb. 20, 1981, Ser. No. 236,347

Claims priority, application France, Feb. 20, 1980, 80 03676

Int. Cl.³ G01B *11/26;* G01J *1/20*

U.S. Cl. 356—152 **8 Claims**

1. Apparatus for determining the angular position of a target which is illuminated by light pulses, said apparatus including:

objective lens means for concentrating light from the illuminated target onto a reception surface so as to form a light spot on said surface when the target is illuminated by a light pulse;

a system fo: receiving said light spot, said system including a photoelectric receiver; and

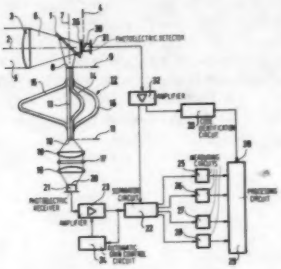
an electric circuit connected to the output of the photo-electric receiver to generate signals which are representative of the position of the light spot on the reception surface;

the improvement wherein the receiving system includes:

a group of n bundles of optical wave guides with the wave guides which form part of the same bundle being all of the same length, and said bundles being of different lengths so as to form a sequence of predetermined lengths, the input surfaces of the wave guides of each bundle being disposed

side by side and facing n respective predetermined portions of the reception surface so that the wave guides of the n bundles transmit light pulses from said spot, the output surfaces of the wave guides being disposed so that the pulses caused by light from said spot act on the same photoelectric receiver in a time sequence which is representative of said sequence of predetermined lengths, whereby the photoelectric receiver delivers, in operation, successive electric pulses whose amplitudes are representative of the illumination of respective portions of the reception surface by the spot, and

wherein said electric circuit includes:



a separator circuit whose input is connected to the output of the photoelectric receiver, said separator circuit including n outputs to deliver respectives ones of said successive electric pulses corresponding to each light spot received on the reception surface;

n measuring circuits respectively connected to the n outputs of the separator circuit to deliver measuring signals which are representative of the amplitudes of respective ones of the successive electric pulses; and

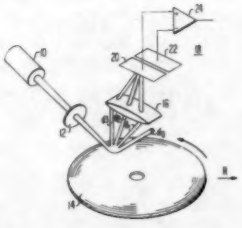
a processing circuit connected to the outputs of the n measuring circuits to transform the measuring signals into signals which are representative of the position of the light spot on the reception surface.

4,395,122

DEFECT DETECTION SYSTEM

Peter D. Southgate, and Istvan Gorog, both of Princeton, N.J., assignors to RCA Corporation, New York, N.Y.

Filed Apr. 29, 1981, Ser. No. 258,759
Int. Cl.³ G01N *21/89*
U.S. Cl. 356—237 **10 Claims**



1. A flaw detection system for detecting protuberances on a surface of a disc having a groove formed thereon, said system comprising:

a source of illumination for providing a beam of light;

means for focusing said beam of light to a spot on the surface of said disc;

means for detecting the light beam reflected from said surface, said detecting means having first and second light sensitive surfaces, said detecting means being positioned such that said first light sensitive surface is illuminated, to the relative exclusion of said second light sensitive surface, by said light beam when said light beam is reflected from a first portion of a protuberance on said disc surface, said second light sensitive surface is illuminated, to the relative exclusion of said first light sensitive surface, by said light beam when said light beam is reflected from a second portion of said protuberance and said first and said second light sensitive surfaces are illuminated substantially equally by said light beam when said light beam is reflected from a portion of said disc surface where protuberances are absent;

the structure of the groove in the region of the spot illuminated by the light beam serving as a diffraction grating for diffracting light reflected from said illuminated spot to form a zero diffraction order cone and higher diffraction order cones of light;

an anamorphic optical system for focusing a plurality of said higher diffraction order cones onto said first and second light sensitive surfaces; and

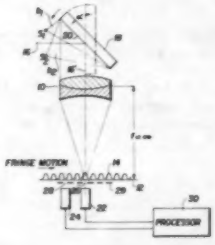
means, responsive to said detecting means, for indicating the presence of said protuberance.

4,395,123

INTERFEROMETRIC ANGLE MONITOR

Peter O. Minott, Bowie, Md., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Oct. 8, 1980, Ser. No. 195,227
Int. Cl.³ G01B *9/02*
U.S. Cl. 356—353 **11 Claims**



1. Apparatus for measuring the angular displacement of a rotatable object having means for reflecting optical beams, by measuring the linear displacement of a series of optical interference fringes, comprising:

means for providing from sources (S_1, S_2) separated by a distance (d) coherent radiation in the form of two mutually coherent, generally parallel optical beams (b_1, b_2) directed toward said reflecting means (**20**) of said rotatable object;

imaging optical means (**10**) positioned to receive said two optical beams from said reflecting means (**20**), for providing a focal plane (**12**) optically at a distance (Z) from said reflecting means of a relatively larger magnitude in relation to the distance (d) separating said sources whereby an interference fringe pattern (**14**) is formed at said focal plane (**12**) which translates linearly thereacross in response to angular movement of said reflective means;

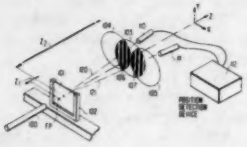
detector means (**22**) located at a predetermined point along said focal plane and being operable to provide an output signal indicative of translation of said fringe pattern; and

means (**30**) responsive to said output signal for providing a measure of said angular movement of said reflective means.

4,395,124
APPARATUS FOR POSITION ENCODING

Paul W. Remijan, Southbridge, Mass., assignor to Randwal Instrument Co., Inc., Southbridge, Mass.

Division of Ser. No. 863,948, Dec. 23, 1977, Pat. No. 4,265,534.
This application Mar. 2, 1981, Ser. No. 239,524
Int. Cl.³ G01B 9/00
U.S. Cl. 356—373 20 Claims



1. Apparatus for indicating the position of a movable element along a motion axis, said apparatus comprising:

A. interference pattern generating means for generating a first diffraction and a second diffraction that are of different order, that have equal strength and that overlap thereby to produce a first high contrast, low noise interference fringe pattern in a first area of overlap,

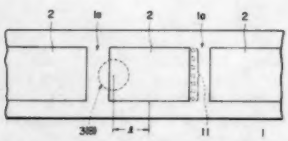
B. first detection means positioned to view the first interference fringe pattern for producing signals dependent upon the first interference fringe pattern, and

C. motion means for producing relative movement of said generating means and said detection means along the motion axis thereby to move said first interference fringe pattern with respect to said detection means.

4,395,125
CENTERING SYSTEM

Nobutaka Kaneko, Hachiouji, and Toshihide Fujiwara, Fuchu, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Aug. 5, 1980, Ser. No. 175,415
Claims priority, application Japan, Aug. 16, 1979, 54-103612
Int. Cl.³ G01B 11/00; G01N 21/86
U.S. Cl. 356—400 2 Claims

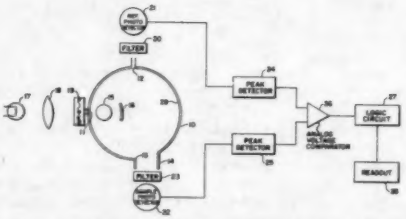


1. A sample centering system comprising a photometric means for colorimetrically measuring samples applied onto a carrier shifted in a certain definite direction, a sample detecting means arranged at a definite interval apart from said photometric means in the carrier shifting direction, a sample detection signal generating means connected to said sample detecting means and capable of generating a first signal when the output from said sample detecting means varies so as to be coincident with a predetermined threshold level, a shifting timer start signal generator means connected to said sample detection signal generating means and capable of generating a second signal, a sample detection permitting timer means connected to said shifting timer start signal generator means and capable of commencing operation at a predetermined definite time after shifting of said carrier is started and having a first predetermined definite operation time, a sample detection inhibiting timer means connected to said sample detection permitting timer means and capable of inhibiting sample detection during a predetermined definite time after shifting of said carrier is started, a shifting timer connected to said shifting timer start signal generator means and capable of commencing operation when said second signal is put in and having a second predetermined definite operation time to generate a third signal, a carrier shifting controller connected to said shifting timer and capable of being operated by said third signal, and a carrier shifting mechanism connected to said carrier shifting controller and capable of stopping said carrier with a signal from said carrier shifting controller, said second signal being generated when said first signal is generated if said first signal is generated within said first predetermined definite operation time, or when said first predetermined definite operation time has lapsed if said first signal is not generated within said first predetermined definite operation time.

4,395,126
APPARATUS FOR REFLECTANCE MEASUREMENT OF FLUORESCENT RADIATION AND COMPOSITE USEFUL THEREIN

Donald L. Kramer, Indian Harbor Springs, Fla., assignor to Miles Laboratories, Inc., Elkhart, Ind.

Filed Mar. 12, 1981, Ser. No. 242,890
Int. Cl.³ G01N 21/64
U.S. Cl. 356—417 15 Claims

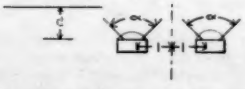


1. Apparatus useful in reflectance measurement of fluorescent radiation emitted by an analyte during transition thereof from an excited state to a ground state, comprising an integrating sphere within which an analyte can be subjected to incident radiation effective to raise such analyte to an excited state, the inner surface of said integrating sphere comprising a composite of two components, at least one of which is in a finely divided state, is dispersed in a vehicle binder which is substantially nonabsorptive of radiation, is transmissive of fluorescent radiation, and is absorptive of incident radiation; and the other component is reflective of both incident and fluorescent radiation.

4,395,127
OPTICAL PAPER DETECTOR

Kenneth R. Duvall, Washington, D.C., assignor to The United States of America as represented by the Secretary of the Treasury, Washington, D.C.

Filed Sep. 11, 1980, Ser. No. 186,364
Int. Cl.³ G01N 21/89; G01B 11/06
U.S. Cl. 356—430 8 Claims



1. In an improved optical paper control assembly wherein a light source and an optical paper detector are adapted to sense the presence of more than a single sheet of paper to be printed wherein said improvement comprises an improved optical paper detector, said improved detector comprising a planar

array of photosensors having individual sensing angle α, substantially equal to 75 degrees, said photosensors being spaced from each other a first distance substantially equal to s and from said paper a second distance d substantially equal to 0.65s where d and s are related to α by the following relationship

$$d = s/2 \tan (90° - \alpha/2)$$

where said array is responsive to light transmittance through a continuous area of said paper which is substantially coincident with the physical area of said planar array.

4,395,128

MIXING TOWER FOR CONCRETE OR THE LIKE

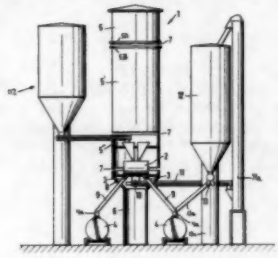
Paul Mathis, Merdingen, and Max Zimmer, Efringen-Kirchen, both of Fed. Rep. of Germany, assignors to Mathis System-Technik GmbH, Merdingen, Fed. of Germany

Filed Jul. 15, 1981, Ser. No. 283,384

Claims priority, application Fed. Rep. of Germany, Jul. 17, 1980, 3027069

Int. Cl.³ B28C *7/04, 9/00*

U.S. Cl. 366—18 **23 Claims**



1. A mixing tower for the production of concrete, dry mortar and like materials comprising:

a plurality of prefabricated, superimposed modules including a lowermost module which constitutes at least the predominant source of support for the remainder of said modules and a mixing module having a mixing device for mixing ingredients to form a flowable product, said lowermost module being in direct contact with a selected module supported by the same, and said lowermost module having a maximum transverse dimension as considered along a predetermined direction which is smaller than the corresponding maximum dimension of said selected module so that the latter projects to at least two sides of said lowermost module, at least one of said modules being provided with outlet means for discharging the product formed in said mixing module to transport means.

4,395,129

FEED SYSTEM FOR ASPHALT RECYCLING DRUM MIXERS

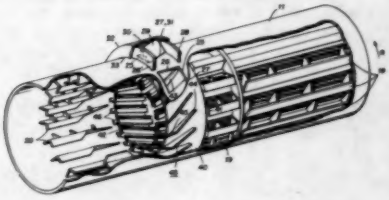
Joseph E. Musil, Ely, Iowa, assignor to Iowa Manufacturing Company of Cedar Rapids, Iowa, Cedar Rapids, Iowa

Filed Feb. 4, 1982, Ser. No. 345,565

Int. Cl.³ B28C *1/22, 5/20, 5/46*

U.S. Cl. 366—25 **4 Claims**

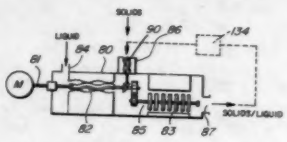
1. In a drum mixer for recycling old asphalt pavement which has been removed and sized to produce an aged mix, the mixer including a cylindrical outer drum having upstream and downstream ends; means for rotating the outer drum about its axis; burner means at the outer drum upstream end for injecting hot gases axially into the outer drum towards its downstream end; means for introducing virgin aggregate into the outer drum adjacent its upstream end; means for introducing aged mix into the outer drum at a medial location thereon downstream of the virgin aggregate introducing means, the aged mix introducing means including a plurality of feed ports through the outer drum spaced circumferentially therearound, a conical inner drum within and fixed to the outer drum in axial alignment therewith, the large and small ends of the inner drum constituting upstream and downstream ends thereof corresponding to said ends of the outer drum, the feed ports opening radially onto the exterior of the inner drum adjacent its upstream end and having leading and trailing edges with respect to the direction of drum rotation, a stationary shroud of generally annular configuration surrounding the exterior of the outer drum and the feed ports effective to define an enclosed channel of annular configuration between the shroud and the feed ports, the shroud including a circumferential wall, and a hopper associated with the shroud for introducing aged mix into said channel, aged mix from the hopper entering the shroud circumferential wall tangentially thereof; means in conjunction with rotation of the outer drum for moving virgin aggregate and aged mix in a downstream direction through the interiors of the outer and inner drums including flighting arranged about the interiors of the outer and inner drums; and means for introducing fresh asphalt into the interior of the outer drum downstream of the inner drum, the improvement comprising: a pair of annular side walls in said channel and carried upon the outer drum wall, the side walls being respectively disposed upstream and downstream of the feed ports and in close proximity to the interior of the shroud; a plurality of aged mix deflectors disposed in said channel, the deflectors being carried upon and rotating with the outer drum relative to the shroud, the deflectors having leading and trailing faces and ends with respect to the direction of drum rotation, each deflector being secured between the annular side walls and disposed in close proximity to the interior of the shroud and one of the feed ports effective so that aged mix introduced into the shroud from the hopper is immediately directed by the annular side walls and the deflector leading face into the associated feed port and onto the exterior of the inner drum during drum rotation; and a plurality of flights circumferentially spaced about the exterior of the inner drum between the same and the outer drum interior, the flights having upstream and downstream ends corresponding to said ends of the inner drum such that aged mix passing through the feed ports contacts the flights adjacent their upstream ends and is directed therealong and the exterior of the inner drum to the downstream ends of the flights and the inner drum, aged mix thereupon joining virgin aggregate emerging from the interior of the inner drum during drum rotation, the flights extending in skewed relation to the drum axis so that said flight upstream and downstream ends constitute leading and trailing ends of the flights with respect to the direction of drum rotation, the deflectors and the trailing edges of the feed ports also extending in skewed relation in the same direction to the drum axis as are said flights, the trailing ends of the deflectors abutting respective ones of the trailing edges of the feed ports.



4,395,130
INTERCONNECTED PUMPING MECHANISM

Oleh Kutowy, R.R. #3, North Gower, Ontario, Canada

Filed Apr. 1, 1981, Ser. No. 249,938
Int. Cl.³ B01F 5/12
U.S. Cl. 366—137 20 Claims

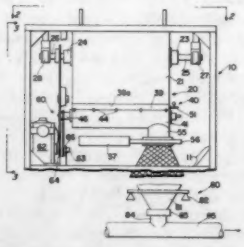


1. A dual pump comprising:
(a) a casing;
(b) a first pumping mechanism within said casing, said first pumping mechanism having an operating shaft within said casing, said operating shaft being operated by a motor, said first pumping mechanism having pumping structure so constructed and arranged as exclusively to provide a high pressure, low volume liquid flow, said first pumping mechanism having axial output;
(c) a second pumping mechanism within said casing, in direct liquid flow connection with said first pumping mechanism, said second pumping mechanism having an operating shaft within said casing, said operating shaft being operated by the same said motor, said second pumping mechanism having an axial input in direct liquid flow connection to said axial output of said first pumping mechanism; said second pumping mechanism having a first radial port at said direct liquid flow connection between said first pumping mechanism and said second pumping mechanism, and a second port at said opposite end thereof; said second pumping mechanism having pumping structure so constructed and arranged as exclusively to provide a low pressure, high volume aqueous liquid flow; and
(d) a connection between said first pumping mechanism and said second pumping mechanism, said connection being within said casing and being in the direct axial path of said liquid flow, thereby obviating the need of the shaft seal between the output of said first pumping mechanism and the input of said second pumping mechanism.

4,395,131
APPARATUS FOR AGITATING, CONVEYING AND WEIGHING PARTICULATE MATERIAL

Robert C. Barlow, Seaford, Del., assignor to O. A. Newton & Son Company, Bridgeville, Del.

Filed Sep. 30, 1980, Ser. No. 192,376
Int. Cl.³ B01F 15/02
U.S. Cl. 366—141 5 Claims

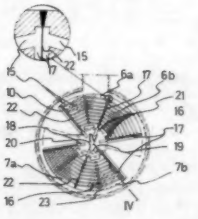


1. In combination,
(a) an agitator hopper comprising
(i) a housing having a feed opening in the upper part thereof,
(ii) a rotating agitator in said housing,
(iii) a shaft drivingly connected to said agitator, and
(iv) a delivery opening in a lower part of said housing,
(b) a screw conveyor below said agitator hopper comprising
(i) a housing having an inlet in the upper part thereof in communication with the outlet of said agitator hopper,
(ii) a conveyor screw in said housing having a shaft, and
(iii) a delivery conduit connected with said screw conveyor housing for receiving material therefrom and having a cut-off valve therein,
(c) a weighing hopper including
(i) an inlet connected to the delivery conduit,
(ii) material receiving and weighing means, and
(iii) discharge means for discharging weighed material therefrom, and
(d) drive means for said shafts of said agitator hopper and screw conveyor including means for selectively varying the speed thereof,
whereby the rate of delivery of material of said weighing hopper may be selected to utilize the entire filling period available at the slowest delivery speed and thereby to obtain the least amount of material in flight subsequent to the closure of said valve.

4,395,132
STIRRING GEAR WITH INTERNAL HEATING

Achiel Wyffels, Roeselare, Belgium, assignor to Constructie Werkhuizen Vandekerckhove N.V., Roeselare, Belgium

Filed Dec. 29, 1980, Ser. No. 220,920
Claims priority, application Belgium, Dec. 28, 1979, 880930
Int. Cl.³ B01F 15/06
U.S. Cl. 366—147 19 Claims



1. Stirring gear with internal heating comprising a central tubular shaft for the supply of the heat exchange medium and stirring paddles mounted perpendicular to said shaft and provided with hollow inner spaces for the access of the heat exchange medium, wherein a stirring paddle comprises a solid plate with a hollow inner space therein and said space further comprising a system of interconnecting ducts, wherein a number of said ducts extend substantially radially of said shaft and a number of said ducts extend substantially transversely of said shaft, wherein said transversely extending ducts define at least one radial array of ducts, wherein adjacent said radial ducts are interconnected by said radial array.

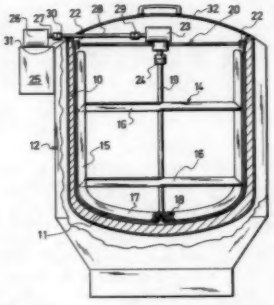
4,395,133
COOKING APPARATUS HAVING A STIRRING DEVICE

Roy L. R. Clevenholm, Staffanstorp, and Carl-Olof H. Mellqvist, Helsingborg, both of Sweden, assignors to Landskrona Finans AB, Landskrona, Sweden

Filed Sep. 14, 1981, Ser. No. 301,585
Claims priority, application Sweden, Sep. 25, 1980, 8006705
Int. Cl.³ B01F 7/32
U.S. Cl. 366—241 2 Claims

1. A vessel provided with a stirring device for stirring contents charged in the vessel comprising, a bowl shaped con-

tainer open at the top, tiltable support means operatively connected to said container to support said container upright and tilt said container for pouring the contents therefrom, and a stirring device comprising a stirrer having a central shaft extending into said container from the top thereof substantially parallel with respect to the geometric central axis of said container, and agitators attached to said central shaft to stir the contents of the container when said shaft is rotated about its longitudinal axis, a fixed conical stud at the bottom of said container, a substantially conical recess in the bottom of said stirrer operatively and removably engaging said stud so that said stud rotatably supports said stirrer, a truss structure having radial arms, detachable connectors for connecting the radially outer ends of said truss arms adjacent the upper edge of said container, a first angular gearing supported on said truss structure adjacent the upper end of said central shaft, a stud shaft operatively connected to said angular gearing and extending substantially parallel to said central shaft, quick coupling means interconnecting said stud shaft and the upper end of said central shaft, a radially extending stud shaft operatively connected to said angular gearing, a radial drive shaft extending from adjacent the outer end of said radial stud shaft to a position adjacent the outer top edge of said container, a quick connect coupling interconnecting said radial stud shaft and the radially inner end of said radial drive shaft, a drive motor mounted on the outer side of said container adjacent the radially outer end of said radial drive shaft and having an output shaft extending substantially perpendicular to said radial drive shaft, a second angular gearing operatively connected to said output shaft and having a stud shaft extending substantially radially to a position adjacent the radially outer end of said radial drive shaft, and a quick coupling means interconnecting said outer end of said radial drive shaft and the adjacent end of said stud shaft of said second angular gearing, so that said container can be tilted while simultaneously operating said stirrer by said drive motor.



4,395,134

JOYSTICK SWITCH FOR TIMEPIECES

Nunzio A. Luce, 39 Galston Dr., R.D. #4, Trenton, N.J. 08691

Int. Cl.³ G04B *47/00*; G04F *8/00, 10/00*

U.S. Cl. 368—3 **10 Claims**

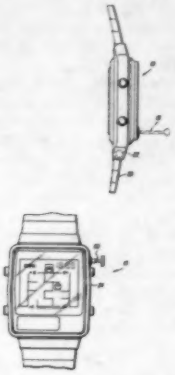
1. An electronic game timepiece having a display device for displaying game elements and electronic circuitry including a printed circuit board having a plurality of conductors thereon connecting electronic-circuit elements on said printed circuit board to drive said display device;

said electronic timepiece including a casing having said display device and said electronic circuitry mounted therein;

a joystick-type switch mounted on said timepiece casing and adapted to be moved into a plurality of contacting positions;

said joystick-type switch having contacting means normally spaced a distance away from said printed circuit board conductors; and

a plurality of conductors mounted on said printed circuit board in close proximity and corresponding to said contacting means of said joystick-type switch, said plurality of conductors being connected to said electronic-circuit elements such that movement of said joystick-type switch into each of its contacting positions causes simulated displacement of at least one of said game elements across said display device.



4,395,135

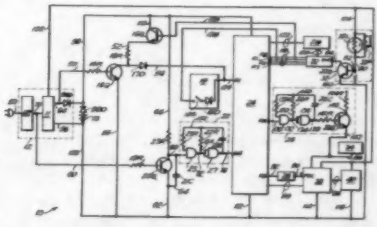
OPTIONAL ALARM AND BATTERY BACKUP SYSTEM FOR A TALKING TIMEPIECE

Richard J. Frantz, Cheshire, Conn., assignor to Timex Corporation, Waterbury, Conn.

Filed May 6, 1982, Ser. No. 375,412

Int. Cl.³ G04B *21/08*

U.S. Cl. 368—63 **3 Claims**



1. A talking timepiece including a keyboard having a voice/-tone switch, a speech processor, and a tone alarm generator, said timepiece having at least two modes of operation including a first mode in which said voice/tone switch is provided for selective manual switching between said speech processor adapted to provide for audible speech sounds in the form of voice messages for announcing time and said tone alarm generator adapted to provide for tone sounds for announcing time and including a power supply failure mode in which said voice/tone switch is bypassed, said speech processor is disabled and tone sounds are automatically produced by said tone alarm generator for announcing time, said timepiece comprising:

a. a computer electrically coupled to said keyboard, to said tone alarm generator and to said speech processor and responsive to said selective manual switching of said voice/tone switch for controlling both said speech processor to produce said voice messages at selected times and said

tone alarm generator to produce said tone alarm sounds at selected times during said first mode of timepiece operation; and, said computer adapted for automatically controlling said tone alarm generator to produce said tone sounds, independent of said selective manual switching of said voice/tone switch, at predetermined times during said power supply failure mode of timepiece operation,

b. a power supply for providing power to said computer and said speech processor during said first mode of timepiece operation,

c. a battery backup electrically coupled to said power supply for providing power to substantially only said computer during said power supply failure mode of timepiece operation when said power supply fails, and

d. circuit switching means electrically coupled to said power supply and battery and to said computer and responsive to a failure of said power supply for bypassing said voice/-tone switch to provide for said computer to automatically control said tone alarm generator independent of said voice/tone switch to produce said tone alarm sounds at predetermined times during said power supply failure mode of timepiece operation.

4,395,136

ELECTRONIC TIMER

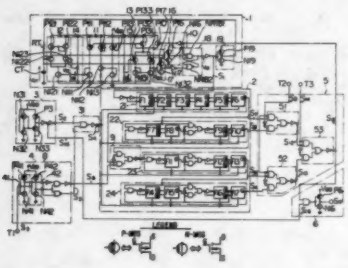
Kenichi Yoda, Hirakata; Hideo Togawa, Tsu; Eizou Ogawa, Ise, and Masao Kayahara, Kadoma, all of Japan, assignors to Matsushita Electric Works, Ltd. and Matsushita Electric Industrial Co., Ltd., both of Osaka, Japan

Filed Jan. 8, 1981, Ser. No. 223,326

Claims priority, application Japan, Jan. 17, 1980, 55-3845

Int. Cl.³ G06F *1/04*

U.S. Cl. 368—156 **8 Claims**



1. An electronic timer comprising a CR oscillating circuit, a counting circuit including a plurality of partial counting circuits connected in cascade to one another for counting oscillated outputs of said CR oscillating circuit, an output circuit driving an associated following circuit in response to an output selected out of outputs from one of said partial counting circuits in the final stage of said cascade connection, an automatic resetting circuit for automatically resetting said plurality of partial counting circuits of said counting circuit upon an application of a source current, an external resetting circuit for resetting the partial counting circuits in response to an external signal, a test circuit for dividing said plurality of partial counting circuits into a plurality of groups, and a test signal generating circuit for inspecting the function of each of said divided groups by externally driving said test circuit, said external resetting circuit and said test signal generating circuit being formed of a common circuit comprising first and second inverting circuits receiving a common external signal and respectively having a low inverting threshold value and a high inverting threshold value so that, when said external signal reaches only said low inverting threshold value, a signal driving said test circuit will be provided and, when the external signal reaches said high inverting threshold value, an external resetting signal resetting said plurality of partial counting circuits of said counting circuit will be provided.

4,395,137

SYNCHRONIZING SYSTEM FOR OSCILLATING MECHANISM

Wallace F. Wiley, 9200 Elmonte, Prairie Village, Kans. 66207

Filed Dec. 21, 1981, Ser. No. 332,601

Int. Cl.³ G04B *17/02, 15/14, 17/12*

U.S. Cl. 368—179 **13 Claims**

1. Apparatus for enhancing the accuracy of a timing system including a mechanism controlled by a powered oscillating member, said apparatus comprising:

an oscillating structure having a greater mass than said member;

a magnetic attracting device including a pair of components, one of the components being carried by the member for movement therewith and the other component being carried by the structure for movement with the latter; and

means mounting the structure for oscillatory movement on a path of travel bringing the components periodically into spaced apart mutually magnetically attracted relationship during oscillation of the structure and the members, whereby energy is transferred between the member and structure through the device during such relationship to govern the rate of oscillation of the member and to continue the oscillation of the structure.

4,395,138

ELECTRONIC TIMEPIECE

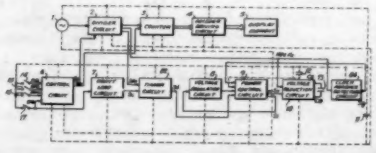
Hiroyuki Chihara, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed May 22, 1981, Ser. No. 266,674

Claims priority, application Japan, May 22, 1980, 55-68221; May 22, 1980, 55-68222; May 22, 1980, 55-68223

Int. Cl.³ G04B *1/00*

U.S. Cl. 368—204 **16 Claims**



1. In electronic timepiece including a time standard signal generating circuit, divider circuit means receiving said standard signal and outputting timekeeping signals of lower frequency, display means indicating at least timekeeping data, and a source of voltage, and at least one heavy load circuit intermittently operating and drawing a current from said voltage source, said heavy load current being large in comparison with normal operating current for timekeeping, the improvement therein comprising:

a voltage reduction circuit, said reduction circuit providing a voltage output which is a division of said source voltage;

a voltage regulation circuit, said regulation circuit providing a constant voltage output;

power control circuit means for selecting one of said voltage reduction and voltage regulation circuits to provide voltage input to said timekeeping circuits, said regulation circuit being selected when said at least one heavy load circuit operates, said reduction circuit being selected when said at least one heavy load circuit is inoperative; and

means for detecting operation of said at least one heavy load circuit.

4,395,139

TEMPERATURE DETECTING DEVICE

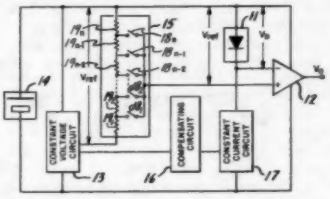
Masayuki Namiki; Masaaki Kamiya; Yoshikazu Kojima, and Kojiro Tanaka, all of Tokyo, Japan, assignors to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

Filed Feb. 20, 1981, Ser. No. 236,492

Claims priority, application Japan, Mar. 14, 1980, 55-32215

Int. Cl.³ G01K 7/00

U.S. Cl. 374—178 **10 Claims**



1. A temperature detecting device comprising: a constant voltage circuit and a series circuit of a temperature detecting means and a constant current circuit connected to a power source in parallel, a resistance ladder circuit connected between an output terminal of said constant voltage circuit and one terminal of said power source, means connecting an output terminal of said resistance ladder circuit to a first input terminal of a differential amplifier, and means connecting a second input terminal of said differential amplifier to a connection point of said temperature detecting means and the constant current circuit, whereby a temperature signal is produced as an output voltage of said differential amplifier.

4,395,140

BEARING MOUNTING WITH HYDRAULIC FASTENING MEANS FOR CRANES AND THE LIKE

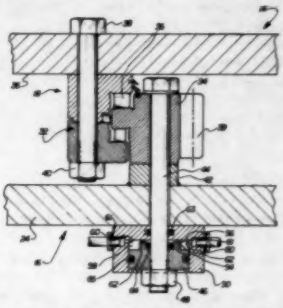
Harvey J. Sable, Hudson, Ohio, assignor to Rotek Incorporated, Aurora, Ohio

Filed Oct. 2, 1981, Ser. No. 307,780

Int. Cl.³ F16C 27/00

U.S. Cl. 384—99 **13 Claims**

1. In an apparatus having a multiload rolling contact bearing for transmitting relatively high loads including moment loads between first and second structures and having a bearing member releasably connected to said second structure and a plurality of spaced elongated clamping elements extending between said bearing member and said second structure, said elements extending through receiving holes in said bearing member and second structure, the improvement comprising piston means for tensioning said elements to apply a clamping force between said bearing member and said second structure, said piston means being received in hydraulic chamber means on one of said second structue and said bearing member for receiving hydraulic pressure fluid to urge said piston means away from said bearing member and said second structure for tensioning said elements during operation of said bearing to transmit loads between said structures, each of said elongated elements having first means at one end thereof for transmitting the force of said piston means to tension the element and second means at its other end for applying the force of said piston means to one of said second structure and said bearing member to clamp said



second structure and bearing member together with one of the first and second means comprising a separable connection for enabling the element to be removed from its receiving hole in at least one of said second structure and said bearing member.

4,395,141

BEARING AND SEAL ASSEMBLY FOR STERN TUBES OF VESSELS

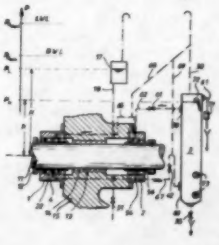
Günter Pietsch; Gerhard Walter; Günter Mewes, all of Hamburg, and Gert Schrader, Rosengarten, all of Fed. Rep. of Germany, assignors to Howaldtswerke Deutsche Werft Aktiengesellschaft Hamburg und Kiel, Hamburg, Fed. Rep. of Germany

Filed Apr. 5, 1982, Ser. No. 365,586

Claims priority, application Fed. Rep. of Germany, Apr. 13, 1981, 3114494; Sep. 26, 1981, 3138413

Int. Cl.³ F16C 33/74; F16J 15/40

U.S. Cl. 384—147 **7 Claims**



1. In a bearing and seal assembly for stern tubes of vessels wherein there is a rotatable stern shaft and a bearing surrounding a portion of the stern shaft and wherein there is means for supplying oil under pressure to provide lubrication between said bearing and said portion of the stern shaft, and wherein there is an aft seal assembly surrounding said stern shaft at the outboard end of said bearing, and wherein said aft seal assembly contains two sealing elements spaced apart axially and an annular chamber defined by said sealing elements and means for applying a liquid lubricating the sealing elements into said annular chamber under pressure, the improvement comprising

a gravity tank for a lubricant providing lubrication of the bearing, the gravity tank being arranged inside the vessel in a height to induce a head of the oil lower than the possible minimum of the head of the sea-water surrounding the aft seal assembly,

a circulation system for the liquid in the annular chamber,

which comprises a tank for said liquid, the tank being positioned inside the vessel in a height to induce a head of said liquid in said annular chamber lower than the head of the oil in the bearing,

a separating tank for separating and purifying the liquid, a first pipe for said liquid connecting the upper part of the tank with the annular chamber,

a second pipe for said liquid connecting the annular chamber with the separating tank, and

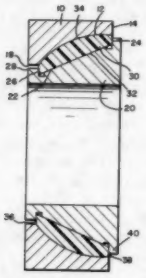
pumping means for circulating said liquid from the tank through said first pipe, circumferentially through said annular chamber and through said second pipe to the separating tank which is connected with the tank inducing the head of the liquid in the circulation system.

4,395,142

SELF-ADJUSTING ANGULAR CONTACT SPHERICAL BEARING

John H. Lobeck, South Bend, Ind., assignor to The Torrington Company, Torrington, Conn.

Filed Mar. 18, 1981, Ser. No. 245,180
Int. Cl.³ F16C *23/04*
U.S. Cl. 384—192 **2 Claims**



1. A spherical bearing comprising: an outer race having a curved, indented inner surface generally tapering inwardly from one axial end of the outer race toward the other end; a one piece support having an annular channel, the bottom surface of the annular channel tapering toward the axis of the support from one side of the annular channel to the other side of the annular channel and in the same direction as the curved, indented inner surface of the outer race; and a single removable annular plastic liner snap fitted within said annular channel, and having an inner surface complementary with the bottom surface of the annular channel and an outer surface complementary with the curved, indented inner surface of the outer race.

4,395,143

ANNULAR, FLEXIBLE BEARINGS FOR RADIAL LOADS

Gordon J. Bakken, Buzzards Bay, Mass.; Alfred R. Randall, Brigham City, Utah, and Richard W. Bodily, Malad, Id., assignors to Thiokol Corporation, Newtown, Pa.

Filed Aug. 21, 1978, Ser. No. 934,754
Int. Cl.³ F16C *27/02*
U.S. Cl. 384—221 **4 Claims**

1. An annular, flexible bearing comprising:

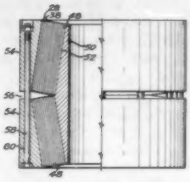
a bearing assembly comprising concentric, annular, conic layers of rigid material and similarly shaped layers of elastomer alternately arranged therewith, each said layer being bonded to adjacent layers;

an inner ring having an inner, cylindrical surface and an outer, conic surface bonded to the inner, conic surface of the bearing assembly;

an outer ring having an inner, conic surface bonded to the outer conic surface of the bearing assembly;

an annular plate having an inner diameter slightly larger than that of the inner ring; and

a flexible, annular bearing pad comprising alternate layers of rigid material and elastomer stacked and bonded together,



the bearing pad being bonded on one side to the thicker edge of the inner ring; and

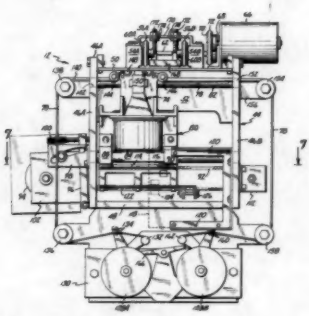
means for compressing said bearing assembly by moving the annular plate toward the outer ring in an axial direction, and moving the inner ring via the annular bearing pad.

4,395,144

APPARATUS FOR PRINTING ALPHANUMERIC INFORMATION ON PHOTOGRAPHIC SLIDE MOUNTS

Daniel O. Adams, Blaine, and Gregg S. Beckman, St. Louis Park, both of Minn., assignors to Pako Corporation, Minneapolis, Minn.

Filed Jan. 21, 1982, Ser. No. 341,296
Int. Cl.³ B41J *3/10*; B41F *17/00*
U.S. Cl. 400—30 **16 Claims**



1. Apparatus for printing alphanumeric information on photographic slide mounts, the apparatus comprising:

(a) a generally horizontal slide track along which the photographic slide mounts are advanced, the slide track having an entrance end and an exit end and including a film insertion station proximate the entrance end and a printing station between the film insertion station and the exit end;

(b) film insertion means for causing a photographic film transparency to be at least partially inserted into the slide mount at the film insertion station;

(c) mount indexing means for causing the slide mount to be indexed from station-to-station along the slide track;

(d) a frame positioned generally below the slide track which includes first and second side supports and a top platform having a printing aperture therein at the printing station of the slide track;

(e) guide means cooperating with the platform for defining the slide track from the film insertion station to the printing station;

(f) a plurality of horizontal guides supported by the frame and defining a carriage track, the horizontal guides and carriage track both being positioned below the slide track and carriage track being aligned in a plane parallel to a

plane defined by the slide track and running in a generally transverse direction to the slide track;

(g) a carriage movable on the carriage track below the slide track;

(h) a print head carried by the carriage below the slide track for printing alphanumeric characters through the printing aperture of the top platform of the frame onto a bottom surface of a slide mount when the slide mount is positioned at the printing station of the slide track;

(i) carriage drive means for moving the carriage on the carriage track; and

(j) control means for controlling the print head and the carriage drive means to print selected alphanumeric information on the slide mount positioned at the printing station, the control means including:

(1) means for storing data representative of the alphanumeric information to be printed on the slide mount;

(2) means for providing a carriage drive control signal to the carriage drive means to move the carriage in a selected direction on the carriage track;

(3) means for providing signal pulses representative of the incremental motion of the carriage on the carriage track, the means for providing signal pulses including:

(A) a linear optical encoder having a first end portion, a second end portion and an intermediate portion, with a plurality of lines spaced at predetermined incremental distances being carried on the intermediate portion of the linear optical encoder;

(B) optical sensor means for optically sensing the lines of the linear optical encoder and producing signal pulses as the linear optical encoder moves relative to the optical sensor means as a result of movement of the carriage on the carriage track;

(C) aperture plate means having an aperture which defines a window portion of travel of the carriage on the carriage track during which actuation of the print head is permitted; and

(D) window sensor means for optically sensing the aperture and producing a signal as relative movement of the aperture occurs as a result of movement of the carriage on the carriage track; and

(4) means for controlling the print head as a function of the stored data and the signal pulses, the means for controlling the print head initiating operation of the print head after a first predetermined number of signal pulses have been provided and being responsive to the signal from the window sensor means to disable the print head when the carriage is outside of the window portion of travel.

4,395,145

SERIAL PRINTER

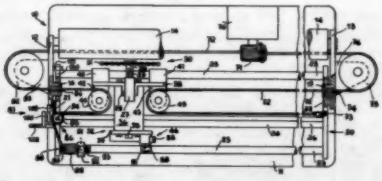
Felice Giacone, Giaveno; Raffaele Becchi, and Boris Ukmar, both of Ivrea, all of Italy, assignors to Ing. C. Olivetti. & C., S.p.A., Italy

Filed May 28, 1981, Ser. No. 267,911

Claims priority, application Italy, Jun. 5, 1980, 67869 A80

Int. Cl.³ B41J *1/24, 19/20, 11/20*

U.S. Cl. 400—59 **14 Claims**



1. A serial printer comprising a base, a platen mounted on said base, a frame pivoted on said base and including guides parallel to said platen, a carriage slideable on said guides and a printing device mounted on said carriage, wherein said frame has two lateral pivots which lie adjacent to the lateral ends of said guides on an axis parallel to said platen in such a way that said guides can swing about said axis while remaining constantly parallel to said platen, wherein a motor mounted on said base controls the displacement of said carriage along said guides by means of a flexible connection cable, wherein a coaxial hole is provided in each one of said lateral pivots of said frame and wherein said flexible cable passes through the coaxial hole of said pivots.

4,395,146

METHOD AND APPARATUS FOR OPERATING A THERMAL PRINTER WITH UNIFORM HEAT DISTRIBUTION

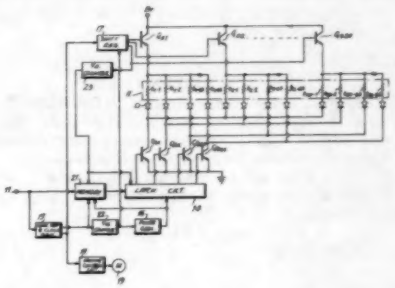
Kiyoshi Arai, Higashikurume, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Nov. 2, 1981, Ser. No. 317,064

Claims priority, application Japan, Nov. 6, 1980, 55-156242

Int. Cl.³ B41J *3/04;* **G01D** *15/10;* **G08B** *5/36*

U.S. Cl. 400—121 **10 Claims**



1. Apparatus for controlling a printer of the kind having m blocks of print heads, each block including n print heads (m and n are integers), comprising storage means for storing data representing the selective energization of said print heads; selecting means for selecting a group of nonadjacent data in each block, where the number of data in each said group is less than n; and energizing means responsive to said data for energizing print heads in each block corresponding to said selected group of data, each successive block being energized sequentially, said selecting means including means for selecting a different group of data following each energization of the corresponding print heads in the m-th block.

4,395,147

DAISY WHEEL PRINTER

Gerald Avison, Cambridge, and Philip T. Blenkinsop, Herts, both of England, assignors to Spiralux Limited, Kent, England

Filed Jul. 2, 1981, Ser. No. 279,758

Claims priority, application United Kingdom, Jul. 9, 1980, 8022459

Int. Cl.³ B41J *1/30*

U.S. Cl. 400—144.2 **6 Claims**

1. A printer having a printing head comprising:

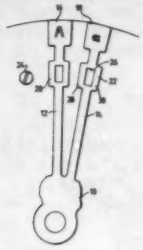
a daisy wheel including a plurality of radial stalks, each of said stalks having a zone, the radial position of said zones being identical for all of said stalks;

at least one slit-like aperture at said zone of each said stalk, said at least one aperture being positioned so as to divide said stalk into at least two branches of equal circumferential width, said stalks and apertures being sized and configured such that equal circumferential widths are provided

for said apertures and the spacing between branches of adjacent ones of said stalks;

means for rotating said daisy wheel; and

non-contacting sensor means constructed and adapted for providing a signal in response to a sensed transition of an



edge of one of said branches as said daisy wheel is rotated, whereby a train of said signals is generated at regular intervals during rotation of said wheel, the frequency of said signals being a multiple of the number of said stalks passing said sensor means.

4,395,148

POSITIONING OF A MULTICOLOR RIBBON

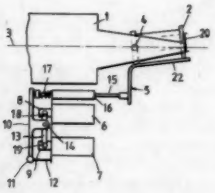
Manfred Grüner, Ulm, and Wolfgang Hendrischk, Neu-Ulm, both of Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Apr. 13, 1981, Ser. No. 253,874

Claims priority, application Fed. Rep. of Germany, Apr. 15, 1980, 3014820

Int. Cl.³ B41J *35/14*

U.S. Cl. 400—212 **5 Claims**



1. In a printer having a movable carriage with a print head mounted thereon, an arrangement for obtaining different color printings, there being an ink ribbon having a plurality of ink tracks, comprising:

a ribbon guide displaceably mounted on the head for holding the ribbon in front of the head in a plurality of different positions so that different ink tracks face the head;

at least two electromagnets, respectively having plungers, and each one providing either a fully retracted or a fully protracted plunger position;

first lever means, including a one-arm lever pivoted at one end about a point fixed relative to the carriage, and being coupled to the plungers, to establish four different displacement positions of the free end of the one-arm lever, the positions depending upon the combination of states of energization and de-energization of the magnets, there being four such combination states accordingly; and

second lever means connected to the one arm lever at a point between a pivot point of the one-arm lever and the free end thereof for translating the four displacement positions thereof into four different guide positions for establishing respectively said plurality of different positions of the ribbon guide.

4,395,149

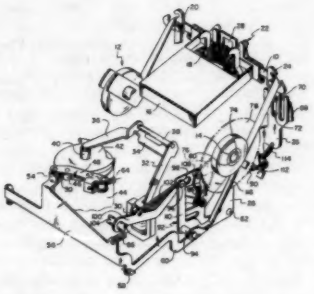
RIBBON DRIVE MECHANISM

Scott J. Longrod, Woodbury, Conn., assignor to SCM Corporation, New York, N.Y.

Filed Sep. 11, 1981, Ser. No. 301,342

Int. Cl.³ B41J *33/18, 35/10*

U.S. Cl. 400—215 **3 Claims**



1. A system for feeding a ribbon in typewriters and similar machines having a frame and a print point comprising:

a supply spool fixed with respect to the frame carrying a supply of ribbon;

a ribbon guide fixed with respect to the frame for guiding the ribbon from the supply spool towards the print point;

a bracket vertically moveable relative to the frame;

a take-up spool mounted on the bracket for vertical movement therewith and for receiving the ribbon from the supply spool;

a ribbon guide mounted on the bracket for vertical movement therewith for guiding the ribbon from the fixed ribbon guide toward the take-up spool;

means for raising the bracket for raising the ribbon to the print point;

means for incrementally winding the ribbon on the take-up spool for feeding the ribbon relative to the print point including;

a metering disc (**78**) mounted on the bracket (**26**) for vertical movement therewith for rotating the take-up spool (**14**),

a feed pawl (**82**) mounted for movement with the bracket and engaging the metering disc,

a shaft (**104**) mounted on the frame,

a lifting arm (**100**) pivotably mounted directly on the shaft,

a first pin (**108**) for coupling the feed pawl to the lifting arm and located a predetermined distance from the shaft, and

a second pin (**96**) for coupling the bracket to the lifting arm for moving the lifting arm in response to the vertical movement of the bracket, the second pin located a distance from the shaft less than the predetermined distance of the first pin from the shaft causing the lifting arm to move the first pin a greater amount than the movement of the second pin for moving the feed pawl relative to the bracket to advance the metering disc for feeding the ribbon relative to the print point.

4,395,150

TYPEWRITER DECIMAL TAB MECHANISM

Jorge Costa, Yverdon, Switzerland, assignor to Hermes Precisa International S.A., Yverdon, Switzerland

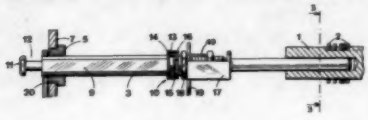
PCT No. PCT/CH79/00024, § 371 Date Oct. 14, 1979, § 102(e) Date Aug. 28, 1979, PCT Pub. No. WO79/00621, PCT Pub. Date Sep. 6, 1979

PCT Filed Feb. 13, 1979, Ser. No. 166,972

Claims priority, application Switzerland, Feb. 14, 1978, 1607/78

Int. Cl.³ B41J *21/14*

U.S. Cl. 400—285 7 Claims



1. Decimal tab mechanism for a typewriter of the type having a printing element carried on a carriage moving parallel to a platen, said mechanism comprising a tab bar capable of being displaced longitudinally and comprising a series of tab blades which may be separately selected, activation means for activating the tab blades selected to place said selected tab blades in active position for cooperation with a carriage stop, an assembly of decimal tab stops each controlled by a key on a keyboard so as to be activated and made to cooperate with a tab bar stop, and a drive shaft connected by temporary coupling means to a continuously rotating machine function shaft, characterized in that the decimal tab mechanism comprises an apparatus for displacing the tab bar longitudinally ahead in the direction of typing, said apparatus being activated by the drive shaft by spring means, a first lever rotating around a stationary axis and disposed orthogonally to the rotation axis of the drive shaft, a control lever having a cam driving the means for activating the selected tab blade, said control lever and cam being integral with the drive shaft and acting on said activation means before the longitudinal displacement of the tab bar, a first angle plate swivelling around said stationary axis and having a nose which rests against the control lever, said spring means including a first spring urging said nose against said control lever, a second spring connecting said first angle plate to said first lever so that a rotation of the control lever is transmitted elastically to a rotation of the first lever cooperating with the tab bar, said first lever comprising clips which engage in an arm of an axle coaxial to the tab bar in such a way that a rotation of the first lever effects a sliding of said tab bar, and connection means between the drive shaft and the decimal tab stops, said connection means including devices for moving a selected decimal tab stop into active position only after longitudinal displacement of the tab bar.

4,395,151

PRINT HEAD DRIVE BELT TENSIONING MEANS AND METHOD FOR LINE PRINTER

Horst M. Krenz, St. Joseph, Mich., assignor to Zenith Radio Corporation, Glenview, Ill.

Filed Nov. 2, 1981, Ser. No. 317,663

Int. Cl.³ B41J *19/14*

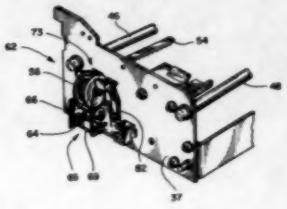
U.S. Cl. 400—320 2 Claims

1. For use in a line printer having a print head for traversing between a first side frame and a second side frame of said printer, said print head being driven in its traverse by a flexible synchronous belt close-looped around a synchronous idler pulley rotatably mounted on an axle external to said first side frame and a motor-driven synchronous pulley external to said second side frame, improved means for providing and maintaining a predetermined tension on said belt comprising:

U-shaped bracket means for supporting said idler pulley, said bracket means including pivot means adjacent to the closed end of said U-shaped bracket means for pivotally coupling said bracket means to said first side frame, said bracket means including inwardly and downwardly sloping slot means in each leg of said bracket means and adjacent to the open end of said U-shaped bracket means for retentatively receiving said axle of said idler pulley;

clamping means consisting of screw means for selectively freeing or fixing the pivot action of said bracket means;

spring means for exerting belt-tightening pressure against said U-shaped bracket means when said bracket means is



free to pivot for providing a predetermined pressure on said belt;

such that when said clamping means is set to free the pivot action of said U-shaped bracket means, said idler pulley support means and said pulley pivot in response to said belt-tightening pressure of said spring means, and when said pivot means is thereafter fixed by said clamping means, said predetermined tension on said belt is maintained without an undesired continual pressure on said belt by said spring means.

4,395,152

DRIVE FOR FRICTION ROLLS IN PRINTERS

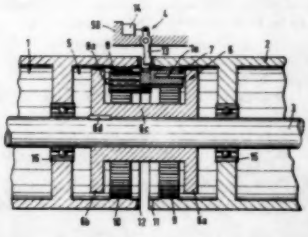
Wolfgang Hendrischk, Neu-Ulm, Fed. Rep. of Germany, assignor to Mannesmann Aktiengesellschaft, Düsseldorf, Fed. Rep. of Germany

Filed Apr. 13, 1981, Ser. No. 253,408

Claims priority, application Fed. Rep. of Germany, Apr. 14, 1980, 3014609

Int. Cl.³ B41J *11/50, 19/78*

U.S. Cl. 400—569 8 Claims



1. Friction drive in printers, including a common shaft and first and second juxtaposed friction rolls, journaled on that shaft, the improvement comprising:

a differential having a cage and two meshing planet gears journaled on the cage for revolving about the shaft, the planet gears being in engagement with each other;

first and second gears disposed respectively inside the first and second rolls and respectively meshing the planet gears for driving engagement; and

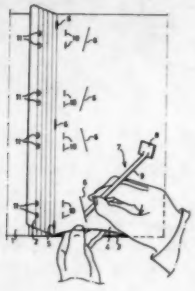
holding means for selectively holding the first roll or the second roll so that the respective other one is driven via the respective planet gear as engaging respectively the first or

the second gear pertaining to the roll not being held by the holding means.

4,395,153
FILE

Huibertus Schimmel, Alphen aan den Rijn, Netherlands, assignor to Samson Efficiency B.V., Alphen aan den Rijn, Netherlands

Filed Sep. 28, 1981, Ser. No. 306,630
Claims priority, application Netherlands, Aug. 14, 1981, 8103821
Int. Cl.³ B42F *13/06*
U.S. Cl. 402—15 **13 Claims**



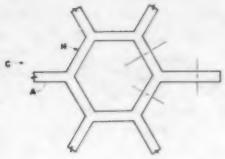
1. A file, comprising a cover and at least two securing members, each securing member being formed of an oblong, narrow lacing portion pointed at one end and connected at its other end to a foot portion which is short and wide with respect to the facing portion; said cover being connected to a support sheet wherein at least two inserting openings, which are wide with respect to the foot, and pertaining to each inserting opening, at least one protruding opening and one securing opening are provided, said protruding openings and said securing openings being narrower than the foot of the securing member so that the securing member is insertable and lacable with its point through the inserting opening and subsequently through the protruding opening, resulting in that the foot will be hooked on the support sheet at the protruding opening whereas, after possibly lacing the lacing portion through sheet material to be filed in the file, the point of the lacing portion is insertable through the securing opening; the distance between the inserting opening and the pertaining protruding opening being larger than the length of the foot portion, measured along the longitudinal axis of a securing member.

4,395,154
GEODESIC DOME CONNECTOR

Martha E. Phillips, 3906 Ridgecroft Rd., Baltimore, Md. 21206, and Roger A. Dudik, 21619 Gunpowder Rd., Lineboro, Md. 21088

Filed Oct. 1, 1981, Ser. No. 307,530
Int. Cl.³ F16B *7/00*
U.S. Cl. 403—172 **2 Claims**

1. In a connector for geodesic dome struts, having a tubular hub wall of axially aligned facets forming interior corners of the hub wall, with a plurality of arms radiating lengthwise from respective of the facets in peripheral angular spacing and in elevational-angle relation to respective of said facets, the improvement comprising: said arms being perpendicular to respective of said facets in plan view, and a system for assembly to comprise a said connector with selected said peripheral angular-spacing between said arms, at least a majority of said arms being paired in plane-parallel relation, said system for assembly including means for bracing the hub-wall against forces applied in any direction along said struts, said hub wall and means for bracing being separate and requiring assembly, means rendering said hub wall flexible for assembly, and said hub wall flexibly guidable on said means for bracing during assembly, including: said bracing means being in the form of a gusset for assembly to said hub wall, a plurality of peripheral edges on said gusset in pre-selected adjacent relation for correspondence with respective adjacent facets of said hub wall, the means rendering the hub wall flexible for assembly to the gusset comprising said hub wall being in two separate peripherally extending pieces prior to assembly, said two separate

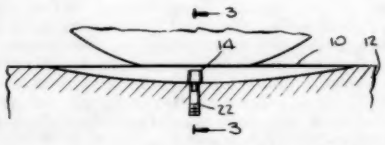


peripherally extending pieces being substantially equal in peripheral extension, said means rendering the hub wall flexible for assembly further including said peripheral extension leaving peripheral gaps between said two separate peripherally extending pieces on assembly, said peripheral gaps proportioned for receiving material for joining said at least two separate peripherally extending pieces on assembly, and means for better conforming the gusset to the hub wall on assembly, comprising said adjacent edges on the gusset being straight and with the corners cut off leaving respective spacings at the interior corners of the hub wall.

4,395,155
REFLECTIVE HIGHWAY MARKER

Frank Bartolotti, Camby Rd., Millbrook, N.Y. 12545, and Douglas Dockstader, 48 High Meadows Pk., Dover Plains, N.Y. 12522

Filed Aug. 18, 1980, Ser. No. 178,990
Int. Cl.³ E01F *9/04*
U.S. Cl. 404—9 **5 Claims**



1. A method of providing a reflective marker in a highway, comprising the steps of:

(a) forming in a highway pavement an elongated groove oriented with its longitudinal axis entending substantially longitudinally of the highway, and

(b) affixing the said groove a reflective highway marker whose height does not exceed the depth of the groove at the place of affixation,

(c) said reflective highway marker having a reflective surface which is oriented to face oncoming vehicles,

(d) the length and depth of the groove forward of said reflective highway marker being sufficient to expose said reflective surface to drivers of oncoming vehicles when their approach distance from the reflective highway marker is adequate for highway guidance purposes,

(e) the groove which is formed in the highway pavement being narrower that the width of vehicle tires to prevent destructive contact between the vehicle tires and the reflective highway marker,

(f) said elongated groove being tapered in depth forward of

the reflective highway marker from substantially zero depth where the groove terminates at the pavement of the highway to a depth substantially corresponding to the height of the reflective highway marker at the place of affixation thereof,

(g) the length of the elongated groove formed in the highway pavement ranging from approximately 1 foot to approximately 3 feet,

(h) the length of the elongated groove forward of the reflective surface ranging from approximately 1 foot to approximately 1 foot, 6 inches,

(i) the depth of the elongated groove at the place of affixation of the reflective highway marker approximating 1 inch,

(j) the width of the elongated groove ranging from approximately 1.5" to approximately 3.5", and

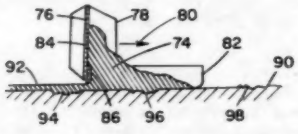
(k) the reflective surface on the reflective highway marker is inclined rearwardly from its lower to its upper edge at an angle ranging from approximately 1 degree to approximately 5 degrees from the vertical.

4,395,156

SURFACE MATERIAL SPREADING

Henry W. Sprague, III, 21 Geneva Walk, Long Beach, Calif. 90803

Filed Aug. 8, 1980, Ser. No. 176,286
Int. Cl.³ E01L *19/18*
U.S. Cl. 404—110 **16 Claims**



12. A particulate material spreader rake for use with a vehicle already fitted with an attachment lifter capable of pulling it and a pile of particulate material when the spreader rake is disposed at the rear of said vehicle and is mounted on said lifter, said spreader rake comprising:

a bucket formed by a transverse back plate and side plates;

means for attaching said bucket to an attachment lifter such that the back plate is held in a substantially vertical plane transverse to the direction in which it is to be pulled; and

height selection means for holding said transverse plate at a selected height above a roadway independently of the action of said lifting means but held down by side arm hydraulic force;

said attachment means comprising a pair of arms, extending substantially in parallel one to the other, each fixed at a first end thereof to a respectively associated one of said end plates;

a pair of bucket extensions carried one on each end of said bucket and extending parallel with said arms respectively, and downwardly therefrom, and forward from said end plates;

means for adjusting the height of the lower edge of each of said bucket extensions above the roadway relative to the position of said transverse plate above said roadway; and

said end plates lying in parallel planes perpendicular to the plane of said transverse plate, said arms being fixed to respectively associated ones of said end plates at the outer opposite said transverse plate;

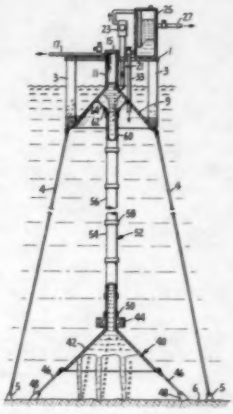
said means for adjusting height comprising two independently acting structures each fixed to a respectively associated one of said arms adjacent to, and at the side of the arm opposite from, the end plate associated with said one arm whereby said arms lie outside the width of the bucket and the height adjusting structures lie outside the width of the arms.

4,395,157

SAFETY OFF-SHORE DRILLING AND PUMPING PLATFORM

Byron H. Cunningham, 1661 Los Piedras Ct., Los Gatos, Calif. 95030

Filed Jul. 9, 1981, Ser. No. 281,575
Int. Cl.³ E02B *17/00*; **E02D** *23/00*
U.S. Cl. 405—60 **4 Claims**



1. A safety off-shore drilling, pumping and storage platform comprising in combination:

a. a surface floating platform comprising a catchment basin in the form of a first inverted funnel having flotation means thereon and flexible means for anchoring said platform to the ocean floor,

b. a second catchment basin being in the form of an inverted submerged funnel, said basin having flotation means thereon and flexible anchoring means for attaching said funnel to the ocean floor, and

c. a flexible lightweight tube connecting said lower funnel to said upper funnel.

4,395,158

METHOD AND APPARATUS FOR ENTRENCHING AN ENLONGATED UNDER-WATER STRUCTURE

Jerry A. Brooks, Rte. 2, Box 204, Silver Creek, Miss. 39663

Filed Jan. 22, 1981, Ser. No. 227,219
Int. Cl.³ E02F *5/08*
U.S. Cl. 405—161 **14 Claims**

1. Apparatus for entrenching an elongate submarine structure such as a pipe or cable comprising

a vehicle having a front and a rear and adapted to be moved along the floor of a body of water;

a first auger assembly mounted at a location offset toward one side of the vehicle;

a second auger assembly mounted at a location offset toward the other side of the vehicle;

means mounting said assemblies on said vehicle for movement to a first position in which the augers are spaced apart to receive therebetween the pipeline to be entrenched, and to a second position in which the augers are inclined inwardly and lower end portions of the auger assemblies are adjacent to each other beneath the elongate structure;

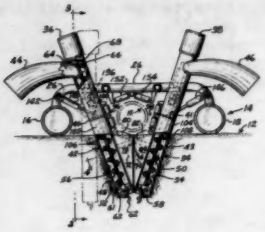
motor means on said vehicle for moving said augers to said first and second positions;

each auger assembly comprising

an auger having an upper portion and a lower portion;

motor means for rotating the auger;

a casing partially surrounding said lower portion to leave a front face of the auger exposed for cutting, said casing



cooperating with said auger to convey bottom material toward the upper portion of the auger; and

casing means substantially enclosing said upper portion and cooperating with said upper portion for conveying the material away from the trench thus formed by the augers.

4,395,159

MECHANICAL PROTECTION COATING FOR COATED METAL SUBSTRATE

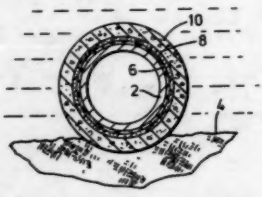
Ergo Karuks, Don Mills, and Martin Rohn, Willowdale, both of Canada, assignors to FRC Composites Limited, Don Mills, Canada

Filed Feb. 18, 1981, Ser. No. 235,719

Claims priority, application Canada, Jun. 6, 1980, 353491

Int. Cl.³ F16L *1/04*

U.S. Cl. 405—172 **16 Claims**



1. In combination with an elongated metal pipe having a thin smooth corrosion protective coating thereon, said corrosion protective coating being one of an epoxy coating, a polyethylene coating, a polyurethane coating and a coal tar coating, a thin cementitious coating adhered to said corrosion protective coating to provide protection for said corrosion protective coating, said cementitious coating being capable of flexing with said pipe and comprising: a cementitious material, a fine filler material of quantity in the range of 0 to 3.5 parts by weight per part of said cementitious material, a polymeric material of quantity in the range 0.05 to 0.55 parts by weight of polymer solids per part of said cementitious material, chopped fibres or flakes of quantity in the range 0 to 0.20 parts by weight per part of said cementitious material, the thickness of said cementitious coating being between 0.5 to 5.0 millimeters, said coating adhering to said corrosion protective coating, said cementitious coating having substantial electrical conductivity when saturated with water, to enable cathodic protection of said pipe by an electric current conducted through said cementitious coating.

4,395,160

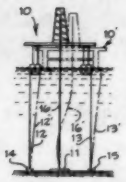
TENSIONING SYSTEM FOR MARINE RISERS AND GUIDELINES

Sijtze deJong, San Jose, Calif., assignor to Lockheed Corporation, Burbank, Calif.

Filed Dec. 16, 1980, Ser. No. 216,800

Int. Cl.³ E02B *17/00*

U.S. Cl. 405—195 **46 Claims**



1. A method of maintaining substantially constant tension on an elongate structure, said elongate structure being secured to a stationary underwater object and extending upward to a buoyant object, said method comprising the steps of:

(a) positioning a weighted structure in proximity to said elongate structure;

(b) positioning first rack means to interact with said elongate structure so that said elongate structure restrains upward motion of said first rack means;

(c) securing second rack means to said weighted structure, said second rack means facing said first rack means;

(d) securing pinion means to said buoyant object, said pinion means extending between said first and second rack means and having teeth that mesh with corresponding teeth on said first and second rack means, gravity acting downward on said weighted structure thereby causing said second rack means to exert a torque on said pinion means that causes said pinion means to impart an upward force to said first rack means, said pinion means undergoing rotational motion as said buoyant object changes position relative to said underwater object, said rotational motion of said pinion means causing said pinion means to travel vertically along said first rack means and to produce concomitant vertical motion of said weighted structure relative to said elongate structure, said upward force imparted to said first rack means remaining substantially constant as said pinion means travels along said first rack means, thereby causing a substantially constant upward tension to be transmitted to said elongate structure.

4,395,161

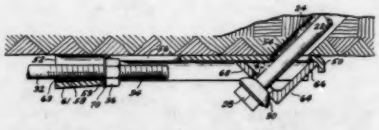
TRANSITION PLATE FOR A MINE ROOF TRUSS

Edwin B. Wilson, Quakertown; C. Frederick Eben, Laureldale; Charles L. Meyer, Bethlehem, and Charles W. Schaeffer, Lebanon, all of Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Nov. 19, 1981, Ser. No. 323,151

Int. Cl.³ E21D *20/00*

U.S. Cl. 405—259 **7 Claims**



1. A transition plate for connecting the inclined and horizontal chords of a mine roof truss comprising a generally flat body having a longitudinal axis extending between the body ends, one face of said flat body defining a generally planar plate

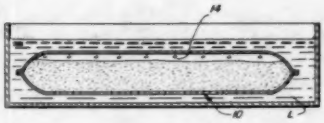
bearing surface adapted to be closely received against a mine roof, a first opening in said flat body adjacent one end of the flat body positioned on said longitudinal axis and adapted to receive a mine roof bolt, and an elongated saddle portion extending outwardly from said one face along said longitudinal axis adjacent said other end adapted to receive a tie member.

4,395,162

CARTRIDGE FOR USE IN ANCHOR BOLTING

John M. Murphy, Mansfield; Robert H. Spensley, Swanwick, and John Ellis, Sutton in Ashfield, all of England, assignors to Societe Anonyme d'Explosifs et de Produits Chimiques, Paris, France

Filed Jun. 25, 1981, Ser. No. 277,343
Claims priority, application United Kingdom, Jul. 23, 1980, 8024033
Int. Cl.³ E21D 20/02; B65D 25/08
U.S. Cl. 405—261 6 Claims



1. An anchoring cartridge for use in anchoring a reinforcing or fixing element in a borehole in a substrate, said cartridge comprising:

a frangible flexible, sealed casing formed from an inert, liquid-impermeable material; and

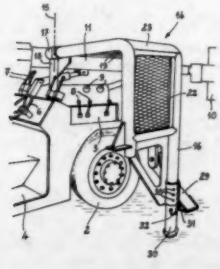
a particulate liquid-settable solid component in said casing, said cartridge being at least partially evacuated so as to cause the casing to be in contact with the solid component over substantially its whole outer surface within the casing, said casing material being perforable to permit ingress of liquid therethrough upon perforation thereof and upon immersion in a body of the component-setting liquid.

4,395,163

MINING APPLIANCE

Raymond J. Perraud, Villeurbanne, France, assignor to Societe d'Etude et de Construction de Machines pour Toutes Industries S.E.C.O.M.A. S.A., Meyzieu, France

Filed Oct. 22, 1980, Ser. No. 199,683
Claims priority, application France, Oct. 26, 1979, 79 27267
Int. Cl.³ E21C 11/02
U.S. Cl. 405—303 4 Claims



1. In a traveling mining machine with an internal driving station for controlling the movement of the machine, an operating station located on a side of said machine, and a tool controlled by the operating station, the improvement which comprises:

a cab including a substantially horizontal canopy formed with op.ings enabling an operator to observe an area above said canopy, a substantially vertical shield extending downwardly along one edge of said canopy, and a seat on said vertical shield; and

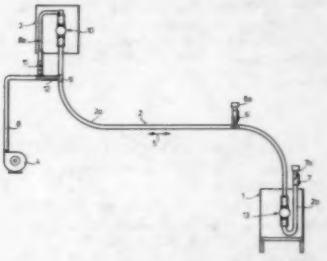
means defining a vertical pivot axis for said cab at a corner of said canopy remote from said shield whereby said cab is integrally swingable from an internal position wherein said canopy forms the sole roof for said driving station to an external position wherein said shield covers and protects said operating station and extends downwardly behind an operator working said tool from said operating station.

4,395,164

PNEUMATIC TUBE INSTALLATION FOR POSTING SAMPLES OF MATERIAL

Herbert Beltrop, Hamm; Josef Teutenberg, Beckum, and Manfred Hilbig, Neubeckum, all of Fed. Rep. of Germany, assignors to Krupp Polysius AG, Fed. Rep. of Germany

Continuation of Ser. No. 133,982, Mar. 26, 1980, abandoned, which is a continuation-in-part of Ser. No. 907,009, May 18, 1978, abandoned. This application May 28, 1981, Ser. No. 267,800
Claims priority, application Fed. Rep. of Germany, May 20, 1977, 2722865
Int. Cl.³ B65G 51/26
U.S. Cl. 406—74 6 Claims



1. In an installation for automatically posting a sample carrier between at least one dispatch station and a receiving station, said installation comprising pneumatic tube means communicating at one end with one end of one of said stations and at its opposite end with one end of the other of said stations and through which tube means said carrier may travel between said dispatch station and said receiving station, and air blower means coupled to said tube means and operable to effect movement of said carrier through said tube means, the improvement comprising carrier support means at least at one of said stations and having an opening therein for the accommodation of said carrier; means mounting said support means for movements between a plurality of positions at said one of said stations; driving means for moving said support means between said positions in one of which said opening is aligned with said tube means; sealing means for effecting a seal between said tube means and said support means when the latter is in said one of said positions; means for adjusting said sealing means to break said seal prior to movement of said support means from said one of said positions to another; clamp means carried by said support means; and means for moving said clamp means into engagement with said one of said carriers prior to movement of said support means from said one of said positions.

4,395,165
CHIP SHUTTLE TRACK

Ignatius J. DeRobertis, Poughquag; Javathu K. Hassan, Hopewell Junction; Robert L. Judge, Poughkeepsie, and John A. Paivanas, Hyde Park, all of N.Y., assignors to International Business Machine Corp., Armonk, N.Y.

Filed Dec. 19, 1980, Ser. No. 218,232
Int. Cl.³ B65G *51/02*
U.S. Cl. 406—88 **8 Claims**

1. An air film conveyor and transporting prismatic conductor chips, the chips having a spaced distribution of a plurality of hemispheric solder mounds within an area on a surface facing said air film, said conveyor comprising:

(a) a base plate, and a pair of upstanding side guide walls extending longitudinally of said base plate, said guide walls being spaced apart a distance slightly greater than the lateral dimension of said chips;

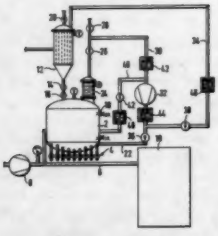
(b) means providing a motion-controlling laminar air flow, which surrounds the chips and forms an air film supporting said chips and propelling them downstream such that the slight spacing between the chips and the guide walls causes the flow resistance to be higher in the one region defined by such slight spacing than in the region defined by the longitudinal spacing between the ends of individual chips, whereby a continuous and flexible separation action occurs between the chips;

(c) the volumetric flow rate of air per foot of conveyor being in the range of 0.0005 to 0.015 standard cubic feet per second.

4,395,166
FLUIDIZATION AND DISTRIBUTION

Leon Ulveling, Howard, Luxembourg, assignor to Paul Wurth S.A., Luxembourg

Filed Mar. 25, 1981, Ser. No. 247,511
Claims priority, application Luxembourg, Apr. 4, 1980, 82336
Int. Cl.³ B65G *53/36*
U.S. Cl. 406—124 **20 Claims**



1. In a process for transportation of a pulverized material, the material being delivered to and temporarily stored in a first container and being subsequently fed from the first container to a second container, the material being thereafter withdrawn from the second container and fluidically conveyed to a consuming device, the improvement comprising:

injecting a pressurized gas into the second container to maintain a pressure therein greater than the consuming device pressure;

venting some of said gas from the second container;

filtering pulverized material from the vented gas;

increasing the pressure of the vented and filtered gas;

re-injecting at least a portion of the vented and pressurized gas into the second container;

selectively delivering gas to the first container at a pressure which is at least as high as the pressure within the second container;

establishing communication between the first and second containers during the delivery of pressurized gas to the first container whereby the pressurized gas aids in feeding material from the first container into the second container; and

continuing to vent gas from the second container during the time that communication is established between the containers whereby at least a portion of the gas injected into the second container is filtered, increased in pressure and thereafter delivered to the first container.

4,395,167
ROUTER ESPECIALLY FOR USE AS A FIBER-METAL CUTTER

Fred Maternus, Chicago, Ill., assignor to National Carbide Tool, Inc., Skokie, Ill.

Filed Mar. 9, 1981, Ser. No. 241,489
Int. Cl.³ B26D *1/12*; B23B *27/10*
U.S. Cl. 407—54 **14 Claims**

1. A router comprising a shaft having at least two intersecting sets of flutes formed thereon, wherein each of said flutes is turned in the same direction, said two sets overlapping in any circumference of said shaft, each flute in a first of said sets having an edge for cutting a kerf, and each flute in a second of said sets having a relatively large cross-section to carry debris cut away by said first set, the pitch angle of both sets of said flutes and the cutting edge of said first set of flutes being such that said router turns in a direction which drives cutting debris downwardly.

4,395,168
MULTIPLE CUTTER ROTARY TOOL

Frank Vicari, 249 Conklin St., Farmingdale, N.Y. 11735

Filed Dec. 19, 1980, Ser. No. 218,397
Int. Cl.³ B27C *3/00*
U.S. Cl. 408—20 **19 Claims**

1. A tool for use with a rotary drive for cutting a workpiece, comprising:

a disc-shaped body having centrally located means for mounting to the rotary drive and defining an axis of rotation;

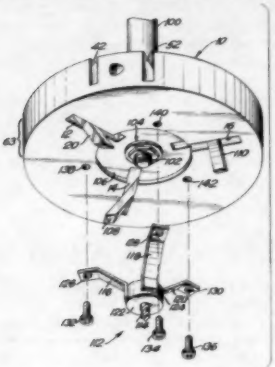
a first plurality of elongate (apertures) slots formed substantially radially in said disc-shaped body and passing through from one side to the other side of said disc-shaped body and being adapted for receiving a first tool bit in each of said first plurality of slots;

each of said first plurality of slots being elongated to have a length substantially greater than a width of said first tool

bit to permit said first tool bit to be positioned at preselected points along the length of said first elongate slot;

a second plurality of slots formed in the rim of the said disc-shaped body pointing generally ouwardly from the center of said disc-shaped body and being adapted for receiving a second tool bit in each slot; and

a third plurality of slots formed in one side of said body and the rim of said disc-shaped body and not extending through said body and pointing generally outwardly from



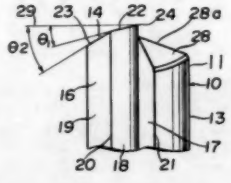
the center of said body and being adapted for receiving at least one of the first tool bits in each slot, whereby upon said disc-shaped body being mounted to the rotary drive and a first tool bit being arranged in each of said first plurality of slots the tool is adapted for axial cutting and upon a second tool bit being arranged in each of said second plurality of slots, the tool is adapted for radial cutting and upon at least one of the first tool bits being arranged in each of said third plurality of slots the tool is adapted for radial cutting of the workpiece.

4,395,169

DRILL BIT

Takashi Kashiwagi, and Hiroshi Kasutani, both of Gifu, Japan, assignors to Mitsubishi Kinzoku Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 26, 1980, Ser. No. 163,264
Claims priority, application Japan, Jul. 4, 1979, 54-92229[U]
Int. Cl.³ B23B *51/06*
U.S. Cl. 408—59 **11 Claims**



1. A drill bit comprising:

a body of a cylindrical shape having a face at its forward end and a straight groove of a generally V-shape including two side faces and a corner into which said faces merge;

said groove being formed in the circumferential surface thereof and extending along the longitudinal axis of the bit body;

said corner being disposed in the vicinity of the longitudinal axis of said bit body;

said bit body having a drilling fluid passageway extending longitudinally through said bit body and opening to said end face;

one of said two side faces having semi-cylindrical convex surface extending radially outwardly from said corner and a flat surface extending radially outwardly from said semi-cylindrical surface to the periphery of said cylindrical bit body;

said semi-cylindrical surface and said flat surface extending along the longitudinal axis of said bit body;

said semi-cylindrical surface terminating at its forward end in an arcuate inward cutting edge while said flat surface terminates at its forward end in a straight outward cutting edge;

said arcuate inward cutting edge and said straight outward cutting edge sloping radially outwardly in a direction away from said forward end of said drill bit body;

said forward end of said drill bit having an apex in the vicinity of said longitudinal axis, and the inner end of said arcuate inward cutting edge being disposed at said apex of said forward end; and

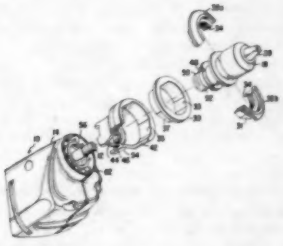
said arcuate inward cutting edge being offset from said straight outward cutting edge when viewed from the forward end of said bit body.

4,395,170

DRILL, DRILL CHUCK, AND METHODS OF CHUCKING AND UNCHUCKING

Michael E. Clarey, Easley, S.C., assignor to The Singer Company, Stamford, Conn.

Filed Aug. 18, 1980, Ser. No. 179,359
Int. Cl.³ B25B *13/44*; B23B *31/06*
U.S. Cl. 408—241 R **3 Claims**



1. Powered drill comprising a housing and including a keyless slidable jaw chuck having a plurality of slidable jaws provided with externally extending teeth mounted within a chuck body having mating angularly spaced slideways for said jaws extending forwardly and inwardly in said chuck body and a traverse nut rotatable on said chuck body having internal threads engaged with said jaws together with a locking shell slidable relative the traverse nut so as to rotate together therewith relative the chuck body, at least one and preferably a plurality of lugs or teeth extending around an annular end of said locking shell adjacent said drill housing and at least one and preferably a plurality of mating lugs or teeth provided on said drill housing adjacent said locking shell, wherein said lugs or teeth are angulated to provide a vector force during torquing which acts in a direction forwardly of the chuck tending to release said lugs or teeth of said sliding shell from their toothed engagement with said drill housing so that, when said shell is slid rearwardly towards said drill, said shell and traverse nut are held against rotation relative said drill and upon actuation of the drill to rotate said chuck body, said jaws will be automatically extended or retracted, depending upon the drill rotation direction, to chuck or unchuck a drill bit or other accessory inserted therebetween, and spring means for retaining said sliding shell in its forward, released or unlocked position to enable normal operative rotation of said chuck while requiring positive operator applied rearward pressure thereon

for engaging said locking means, said spring means further comprising a spring detent for selectively holding said shell in either a forward position wherein said teeth are disengaged for drilling, or the like, and in a rearward position wherein said teeth are engaged for chucking and unchucking so that the inclination of said teeth pops said detent from said rear position to said forward position at a predetermined torque.

4,395,171

CHUCK KEY

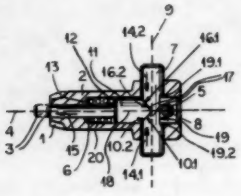
Günter H. Röhm, Heinrich-Röhm-Str. 50, 7297 Sontheim, Fed. Rep. of Germany

Filed Feb. 6, 1981, Ser. No. 232,174

Claims priority, application Fed. Rep. of Germany, Feb. 8, 1980, 3004644

Int. Cl.³ B23B *31/06*

U.S. Cl. 408—241 R **9 Claims**



1. A chuck key comprising:

a body extending along an axis and having an axially forwardly directed end formed with an array of teeth centered on said axis, said body being formed with a bore opening axially forwardly at said forward end;

a crosspiece extending generally radially from said body and fixed thereon remote from said forward end;

a pin displaceable axially in said bore of said body between a front position projecting axially forwardly from said body beyond said teeth and a rear position withdrawn axially backwardly in said body;

a spring braced between said pin and said body and urging said pin into said rear position;

an operating member mounted to be movable radially relative to said body and having an outer end projecting radially from said body; and

means including a pair of interengaging formations on said member and on said pin for displacing said pin against the force of said spring from said rear to said front position on depression of said one end of said member radially inwardly.

4,395,172

CARGO RESTRAINT SYSTEM WITH SPRING FUSE

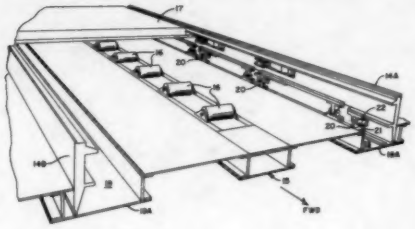
Dieter W. Hoener, Bellevue; Neville L. Lambert, Seattle, and Erwin V. Schweizer, Kent, all of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Dec. 12, 1980, Ser. No. 215,613

Int. Cl.³ B64D *1/10*

U.S. Cl. 410—84 **11 Claims**

1. A combined cargo delivery and logistics cargo restraint system comprising a pair of parallel guide rails for cargo-carrying pallets extending longitudinally along a floor of an aircraft which has a cargo-receiving and delivery opening, a single one of said rails at spaced points therealong being provided with pallet locks for releasably engaging pallets to hold them in positions along the guide rails, a logistics control means coupled to simultaneously move the pallet locks into a first position where said pallet locks will release pallets for movement either forward or aft of the aircraft and a second position where said locks will prevent either forward or aft movement of a pallet, a system of levers coupled to each of said locks, and a cargo-delivery control system including cam means for sequentially actuating each system of levers to move the pallet locks along the rail into a third position where the locks will prevent forward movement of a pallet but will permit aft movement of the pallet by movement of a lock against a biasing force of a spring acting on the lever system thereof; wherein each system of levers includes an actuator arm coupled by a uniball joint to a control arm, and a pivot shaft supported by a



single one of said rails to interconnect said control arm and a pallet lock, and wherein said system further includes troughs formed in said floor of the aircraft, and means mounting said guide rails for pivotal movement from positions where they extend upwardly from the floor to positions where they are rotated downwardly into the troughs and form a flush surface with the remainder of the aircraft floor.

4,395,173

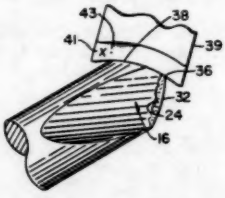
DRILL SCREW WITH PROTECTIVE BURRS

Henry A. Sygnator, Arlington Heights, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Jun. 30, 1981, Ser. No. 279,103

Int. Cl.³ F16B *25/00*

U.S. Cl. 411—387 **4 Claims**



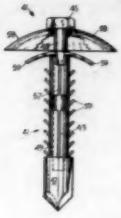
1. A drill screw comprising an elongated shank, a first shank end having a head with drive receiving surfaces thereon and a second shank end having a drill tip formed thereon, said tip having first and second opposing flutes extending partially along said shank each flute intersecting first and second terminal end portions, said intersection of said first flute with said first terminal end portion defining a first cutting edge and the intersection with said second terminal end portion defining a first drag edge, the intersection of the second flute with said second and first terminal ends defining second cutting and drag edges, respectively, the first and second terminal end portions intersecting to define a chisel which extends angularly between said first and second flutes, a first and a second burr extending at least partially along said first and second cutting edges, respectively, at points spaced from said chisel to protect said cutting edges thereby preserving their effective cutting action.

4,395,174

SELF-PENETRATING FASTENER FOR FASTENING ROOFING PANELS TO METAL BEAMS

James D. Freeman, 11 W. Grand Ct., Springfield, Ill. 62704

Filed May 18, 1981, Ser. No. 264,453
Int. Cl.³ F16B 15/06
U.S. Cl. 411—510 9 Claims



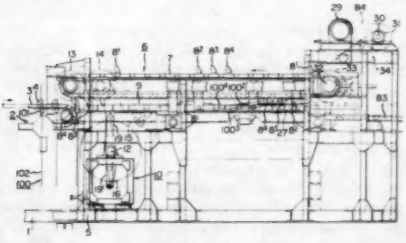
1. A self-penetrating fastener for attaching a sheet-material panel to a plate-like support, comprising: a relatively rigid shaft having an enlarged head and an enlarged hole-forming tip; a sleeve closely surrounding the portion of said shaft between said head and said tip and having axially spaced resilient barb-like projections sized to squeeze through an aperture formed by said tip and to expand beyond the rim of the exit end of said aperture, so as to fasten said panel to said plate-like support by gripping them between said head and expanded portions of said projections; and a bowed spring-material thin spider-like wafer positioned to be compressed between said head and the top surface of said panel.

4,395,175

PROCESS FOR TREATING SCRAP ANODES AND APPARATUS THEREFOR

Hidetoshi Tsurimoto, Tanashi; Koichi Tokunaga, Funabashi, both of Japan, and Martin K. Schonfeldt, Townsville, Australia, assignors to Mesco, Inc., Tokyo, Japan and Copper Refineries Pty. Ltd., Townsville, Australia

Filed Nov. 14, 1980, Ser. No. 206,805
Claims priority, application Japan, Nov. 20, 1979, 54-149481
Int. Cl.³ B65G 57/08
U.S. Cl. 414—21 17 Claims



5. An apparatus for handling scrap anodes, each of which has a barrel, comprising:

an endless conveying means comprising a pair of upper and lower strips having projections for engaging scrap anodes disposed thereon at regular intervals, said conveying strips being disposed in parallel and at regular intervals from each other;

a pair of fixed rails disposed parallel to and under said conveying strips and along the moving direction thereof adapted to have scrap anodes hang therefrom by their upper end shoulder portions, said scrap anodes being pushed along said rails by said projections of said lower strip;

a pair of movable rails disposed following said pair of fixed rails, which movable rails are adapted to move reciprocally in a horizontal direction, which movable rails receive scrap anodes from said fixed rails, said anodes being pushed along said movable rails by said projections of said lower strip;

supporting means for supporting the barrels of the scrap anodes disposed between said movable rails, under said endless conveying strips, and designed to be reciprocally movable horizontally;

working means for moving said supporting means horizontally;

a vertically rotatable rotating plate disposed under said pair of fixed rails and connected through drive-transmitting means with said endless conveying means, said rotating plate being arranged to support the scrap anodes at their lower ends and adjust the scrap anodes to a nearly horizontal position by lifting, in proportion to their movement, the lower ends of said scrap anodes each being suspended by both upper end shoulder portions thereof;

a horizontally rotatable receiving stand disposed under said supporting means and being adapted to ascend and descend between an upper no load position and a lower full load position, as well as rotate horizontally;

lifting means for causing said receiving stand to ascend and descend between the no load position and the full load position;

rotating means for rotating said receiving stand in a horizontal plane; and

controlling means for controlling the operations of the aforesaid respective means, said controlling means being constructed so that said conveying strips and rotating plate are operated thereby to move the scrap anodes to a substantially horizontal position during their transportation along said fixed and movable rails, then move said anodes up to and on the supporting means and halt said anodes thereat; further said working means being operated for moving said supporting means and dropping the scrap anodes onto said receiving stand while maintaining their horizontal position; and still further said rotating means being operated for turning said receiving stand supporting said dropped scrap anodes through a predetermined angle, and said lifting means being operated for lowering said receiving stand by predetermined distances.

4,395,176

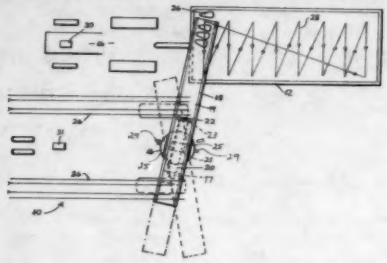
APPARATUS FOR HANDLING HARVESTED MATERIAL

John C. Green, Ely, England, assignor to Hassy Horticultural Development Ltd., Cambridgeshire, England

Continuation-in-part of Ser. No. 111,096, Oct. 1, 1980, abandoned. This application Mar. 12, 1981, Ser. No. 242,994
Claims priority, application United Kingdom, Mar. 5, 1979, 7907585
Int. Cl.³ B65G 67/08, 67/22
U.S. Cl. 414—57 10 Claims

1. Apparatus for use in handling material harvested by a first vehicle and loaded from the first vehicle on to a second vehicle travelling alongside the first vehicle; the apparatus comprising: a base mounted on the first vehicle, a conveyor support mounted on the base, a conveyor and conveyor drive means carried by the conveyor support for conveying harvested material from the first vehicle towards the second vehicle in a conveying direction which lies at an oblique angle to the direction of motion of the vehicles, shuttle means arranged to cause the conveyor support to reciprocate on the base parallel to the conveying direction, drive interrupting means connecting the shuttle motion with the conveyor drive means to cause the conveyor to be driven only during one sense of reciprocation of the conveyor support, and throttle means on the respective vehicles for adjusting the relative speeds of the vehicles in relation to the value of said oblique angle of the conveying

direction to cause the harvested material to be delivered to said second vehicle in uniform layers, with the harvested material



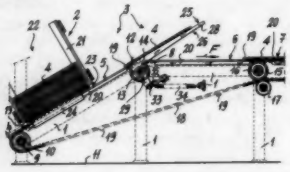
in successive conveyor operations between its drive interruptions laid in rows at right angles to the direction of travel of the vehicles and across the width of the second vehicle.

4,395,177

APPARATUS FOR FEEDING FOLDED AND FLATTENED CARTONS TO A PACKAGING MACHINE

Enzo Seragnoli, Bologna, Italy, assignor to G. D Societá per Azioni, Bologna, Italy

Filed Apr. 24, 1981, Ser. No. 257,357
Claims priority, application Italy, May 15, 1980, 3425 A/80
Int. Cl.³ B65G *59/06*; B65H *3/24, 5/02*
U.S. Cl. 414—130 **10 Claims**



1. In an apparatus for feeding folded and flattened cartons to a packaging machine, a combination comprising:

a continuous path formed of a first rising section, a junction zone, and a second substantially horizontal section associated with its end portion opposite to said junction zone with a packaging line for said packaging machine;

conveyor means movable in a single direction along said continuous path;

pusher means carried by said conveyor means;

a magazine for holding said folded and flattened cartons and overlying said rising section, said magazine having an upper loading opening and a lower outlet opening;

movable supporting means for the cartons at said junction zone between said first and second sections of the path; and

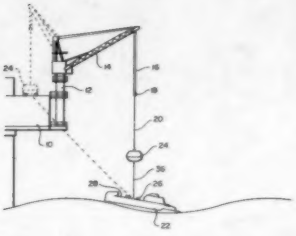
actuating means synchronized with said conveyor means for oscillating said supporting means between a first position arranged in continuation of said first rising section and a second position, where they are arranged substantially coplanar and parallel to said conveyor means along said second substantially horizontal section.

4,395,178

TRANSFER SYSTEM FOR USE BETWEEN PLATFORMS HAVING RELATIVE MOTION BETWEEN ONE ANOTHER

Wayne O. MacDonell, San Francisco, Calif.; Donald L. Graves, Federal Way, and Thomas Timar, Seattle, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Dec. 8, 1980, Ser. No. 214,257
Int. Cl.³ B65G *67/58*
U.S. Cl. 414—138 **49 Claims**



1. A docking station adapted to be used in conjunction with a vessel adapted to float on water, a carrier adapted to be positioned at a landing location on the carrier, a downhaul line operatively connected from said vessel to said carrier, and uphaul means to lift said carrier to said station, said docking station comprising:

a. a docking structure having an upwardly facing receiving surface to engage said carrier as said carrier is lifted by uphaul means and placed on said docking structure,

b. said docking structure having a laterally open through slot to receive said downhaul line extending downwardly from said carrier to said vessel.

3. A transfer system comprising:

a. a first platform;

b. a second platform movable relative to said first platform;

c. first uphaul means operatively connected to said first platform;

d. a carrier adapted to be moved between said first and second platforms, said carrier comprising a carrier housing and extendable and retractable intermediate uphaul means adapted to be connected between said carrier housing and the first uphaul means, said intermediate uphaul means including actuating means to raise and lower said carrier housing relative to the first uphaul means by retracting and extending said intermediate uphaul means;

e. downhaul means operatively connected between the carrier and the second platform and adapted to pull said carrier to said second platform;

f. said actuating means being characterized in that it exerts a tensica force through said intermediate uphaul means greater than weight of the carrier;

g. said downhaul means being characterized in that it has a downhaul operating mode where it exerts on said carrier a downhaul force greater than a value which is equal to the tension force less the weight of the carrier;

h. said actuating means comprising a resilient actuating mechanism comprising an actuating member which is yieldingly urged toward movement in a direction to retract said intermediate uphaul means and yieldingly resist movement in a direction to extend said intermediate uphaul means;

i. said actuating mechanism comprising velocity control means to limit velocity of the actuating member in a direction to retract said intermediate uphaul means.

4,395,179

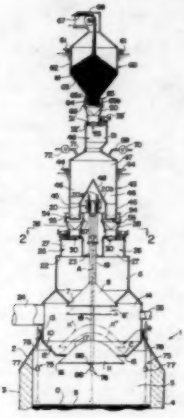
APPARATUS AND METHOD FOR CHARGING MATERIAL INTO A RECEPTACLE

Andrejs Berzins, Parma, Ohio, assignor to Davy Inc., Cleveland, Ohio

Continuation of Ser. No. 25,877, Apr. 2, 1979, abandoned, which is a continuation of Ser. No. 822,811, Aug. 8, 1977, abandoned, which is a continuation-in-part of Ser. No. 665,552, Mar. 10, 1976, Pat. No. 4,067,452. This application Jan. 15, 1981, Ser. No. 225,442

Int. Cl.³ F27B 9/38

U.S. Cl. 414—161 22 Claims



1. Apparatus for charging particulate charge material into a receptacle having an upper portion including a top and upright side wall means defining a chamber into which charge material is to be deposited to form a stockline, said apparatus comprising

choked feed means above said receptacle adapted to discharge charge material downwardly in a single downwardly flowing stream of compact cross section along a single path;

nonrotatable and laterally immovable dividing means below said choked feed means in said path of said stream and above said receptacle adapted to have said downwardly flowing single stream of charge material substantially directly impinge downwardly on said driving means and uniformly divide said downwardly flowing single stream of charge material into a plurality of separate streams of charge material;

gas lock means at the upper portion of said receptacle permitting the entrance of charge material into said receptacle without harmful loss of gas from within said receptacle;

means for causing said plurality of separate streams from said dividing means to pass through said gas lock means into said receptacle; and

said receptacle having distributor means located therein for distributing within said receptable material delivered thereto, spreader means above said distributor means for laterally spreading charge material to said distributor means from said gas lock means, and said distributor means and said spreader means being operable substantially independently of said gas lock means.

4,395,180

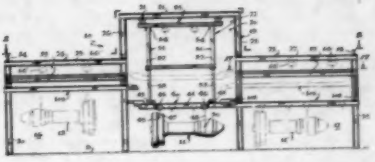
ENGINE UNIT MAINTENANCE COMPLEX

John A. Magnotte, La Mirada, Calif., assignor to Westmont Industries, Santa Fe Springs, Calif.

Filed Sep. 15, 1980, Ser. No. 186,970

Int. Cl.³ B65G 1/06; B66C 7/14

U.S. Cl. 414—282 18 Claims



1. An engine maintenance complex comprising a main frame forming a delivery way having a loading station at one location, service frames forming a plurality of service bays at other locations laterally of the delivery way and a receiving station for the end of each service bay adjacent the delivery way, a transportation rail system on said main frame extending throughout said delivery way, said transportation rail system having a transverse transportation bridge providing a transportation track, horizontally moveable engine support means in travelling engagement with said transportation bridge, a service bridge in each of said service bays adapted to provide a service track for said moveable supports, a plurality of vertically moveable connection means between said service bridge and respective service frame for moving said service bridge vertically between an uppermost position and a lowermost position, and releaseable interconnections at adjacent ends of said service bridge and said transportation bridge adapted for mutual engagement when said bridges are at the same elevation and in longitudinal alignment to enable said moveable supports to pass between said transportation bridge and a selected service bridge.

4,395,181

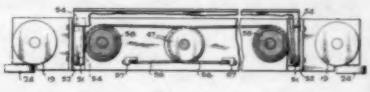
ROBOT VEHICLE

Weston R. Loomer, Walton, Ky., assignor to Litton Systems, Inc., Florence, Ky.

Continuation of Ser. No. 925,525, Jul. 17, 1978, abandoned, which is a continuation of Ser. No. 729,393, Oct. 4, 1976, abandoned. This application Mar. 13, 1980, Ser. No. 130,019

Int. Cl.³ B65G 65/00

U.S. Cl. 414—284 9 Claims



1. A load transporting system comprising:

(a) a movable vehicle;

(b) means for moving said vehicle along a first predetermined path;

(c) substantially horizontally disposed lift means mounted on said movable vehicle to raise or lower a load with respect thereto;

(d) a plurality of flexible members each extending along second predetermined paths and each having a respective first end and a respective second end;

(e) first connecting means interconnecting said lift means and said flexible members proximate said respective first ends of said flexible members;

(f) second connecting means interconnecting said movable vehicle and said flexible members proximate said respective second ends of said flexible members;

(g) eccentric means carried by said vehicle for rotation in a predetermined rotative direction;

(h) said eccentric means further including a surface disposed for coaction with said flexible members such that there is a first portion of each of said flexible members extending between said first connecting means and a place at which said flexible members first engage said surface, whereby rotation of said eccentric means in said predetermined rotative direction effects movement of said first portions of said flexible members and effects operation of said lift means for either raising or lowering a load;

(i) means for driving said eccentric means in said predetermined rotative direction; and

(j) a plurality of spaced guide means for facilitating passage of said flexible members about said eccentric means;

(k) said guide means being located between said eccentric means and said first connecting means.

4,395,182

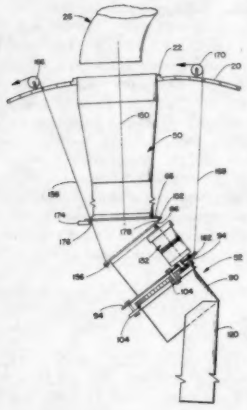
FILLING AND DISTRIBUTION APPARATUS AND METHOD FOR SILOS

Donald W. Suwyn, 3535 - 108th St., Caledonia, Mich. 49316

Filed Oct. 10, 1980, Ser. No. 196,096

Int. Cl.³ B65G *3/04, 31/04, 65/32*

U.S. Cl. 414—299 **11 Claims**



1. Apparatus for selectively center filling and distributor filling a feed storage structure, the structure being of the type including a roof having an access aperture, said apparatus comprising:

a center fill tube having a central axis, an upper inlet end and a lower discharge end, said fill tube dimensioned to fit through the access aperture;

feed distributor means selectively positionable at the discharge end of the center fill tube for distributing feed in a generally circular pattern radially of the central axis of the fill tube;

support means connected to said feed distributor means for supporting said distributor means in a first operative position in line with said center fill tube and in a second inoperative position out of alignment with said center fill tube; and

positioning means connected to said feed distributor means for selectively moving said distributor means between said first operative position in line with said center fill tube to said second inoperative position out of alignment with said center fill tube after a predetermined quantity of feed is loaded into the feed storage structure and from said second position to said first position after another predetermined quantity of feed is loaded into the feed storage structure, said positioning means including a cable having an end secured to said feed distributor means, said cable having a length sufficient to pass out of the feed storage structure to an operator, and wherein said feed distributor means comprises:

a first tube having a central axis, an inlet end and an outlet end;

a second tube having a central axis, an inlet end and an outlet end, said second tube being positioned in telescoping relationship with said first tube;

means for rotatably supporting said second tube on said first tube;

drive means engaging said second tube for rotating said second tube with respect to said first tube, said drive means including a drive motor mounted on one of said first and second tubes, said drive motor having an output shaft; and

a pan secured to said second tube at its outlet end and positioned at an angle with respect to the central axis of said second tube so that when said distributor means is in the first operative position, feed will be directed by the pan radially outwardly from the central axis of said second tube, said feed distributor means is dimensioned to fit within the access aperture of the feed storage structure, said means for rotatably supporting said second tube comprises:

an annular mounting ring secured to said first tube adjacent its outlet end;

a channel-shaped ring secured to said second tube adjacent its inlet end; and

a bearing secured to said mounting ring and riding within said channel-shaped ring so that said second tube is rotatably supported from said first tube, and wherein said drive means further comprises:

means interconnecting said output shaft of said drive motor to said second tube for rotating said second tube as said output shaft rotates, and wherein said apparatus further includes:

control means operatively connected to said drive motor so that said drive motor may be actuated only when said distributor means is in said first position.

6. A method of top filling a feed storage structure with feed having coarse and fine elements, said structure being of the type which includes an elongated, generally cylindrical tank defining an interior side surface, a closed top having a centrally located access aperture and a bottom discharge aperture, said method comprising the steps of:

directing feed from ground level to said access aperture;

distributing said feed in a circular pattern and towards the interior side surfaces of said cylindrical tank until a predetermined quantity of feed is loaded into said structure;

center filling feed into said structure through said access aperture until another predetermined quantity of feed is loaded into said structure; and

repeating said distributing and center filling steps until said structure is fully loaded so that alternating layers of coarse feed elements and fine feed elements are formed within said structure.

4,395,183

LOADING DEVICE

Stig Wirholm, Sollentuna, and Sören Berggren, Vallentuna, both of Sweden, assignors to Tellus Maskin AB, Vallentuna, Sweden

Filed Mar. 13, 1981, Ser. No. 243,500

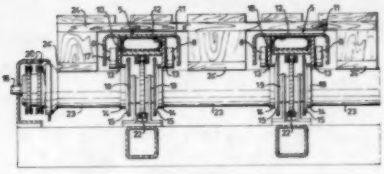
Claims priority, application Sweden, Mar. 17, 1980, 8002061

Int. Cl.³ B65G *25/00*

U.S. Cl. 414—416 **6 Claims**

1. A loading device for loading and unloading a container or similar receptacle with one side to be opened, comprising: a carrying stand (**2**), said stand having a plurality of oblong lifting beams (**5**), each of which along their entire length are formed of a lower beam portion (**10**) and an upper beam por-

tion (11), and are provided with a flexible closed hose (12) between the beam portions with adjustable air supply for restricted control of the lifting and lowering of the upper beam portion (10), a number rows of carrying of wheels on said stand for carrying the lifting beams (5) and mechanical drive means for moving said beams in longitudinal direction, characterized in that each lower beam portion (10) along its length is provided with vertical side flanges (13), which stand on the periphery of rows of said carrying wheels (14), and running



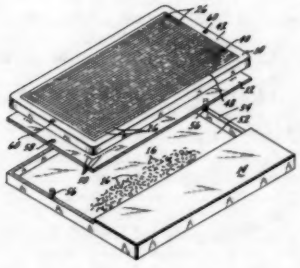
wheels (8) distributed and mounted along the side flanges (13), which running wheels are located entirely free from engagement with the carrying stand (2) and the lowermost portion of their periphery being located at a slightly lower level than the level of the highest portion of the periphery of the carrying wheels (14), whereby the longitudinal stand (2) is supported by the carrying wheels (14), and the portion of the lifting beams (5) projecting outside the carrying stand (2) can be supported by means of said running wheels (8) rolling against a support, such as a container bottom.

4,395,184

MEANS AND METHOD FOR PROCESSING MINIATURE ELECTRONIC COMPONENTS SUCH AS CAPACITORS OR RESISTORS

Denver Braden, Carlsbad, Calif., assignor to Palomar Systems & Machines, Inc., Escondido, Calif.

Filed Feb. 21, 1980, Ser. No. 123,201
Int. Cl.³ H05K *3/30*; B65G *65/04*
U.S. Cl. 414—417 **16 Claims**



1. Means to handle miniature electronic parts such as capacitors, resistors or the like, comprising:

(a) part pushing means having support means and having a bank of juxtaposed pushers secured together to move as a unit and said pushers facing said support means, and said pushing means having means operative to force said bank of pushers toward said support means,

(b) a part handling plate having a plate-like body having a multiplicity of juxtaposed passageways extending from face to face of said body, said passageways having resilient walls whereby when said passageways are slightly smaller in cross-section than the cross-section of the parts to be supported thereby, the passageways will resiliently grip the parts, said plate being disposed between said bank of pushers and said support means and said passageways being aligned with said pushers, whereby said pushers may be forced into said passageways to force parts disposed in said passageways into locations with the ends of the parts oriented relative to a face of said plate-like body in position to be operated upon, and

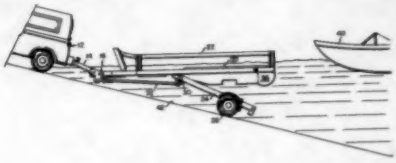
(c) a part unloading plate disposed on said support means between said part handling plate and said support means and said part unloading plate having a multiplicity of recesses in its face toward said part handling plate matching the locations of said passageways whereby parts can be unloaded from said passageways by forcing said parts with said pushers out of said passageways and into said recesses whereupon said part unloading plate can be removed from said support means to dump said parts.

4,395,185

SELF-LEVELING BOAT TRAILER

Morris L. Whaley, Star Rte. (Moss Lake), Gainesville, Tex. 76240

Continuation-in-part of Ser. No. 288,544, Jul. 30, 1981, abandoned. This application Mar. 18, 1982, Ser. No. 359,516
Int. Cl.³ B60P *1/28, 3/10*
U.S. Cl. 414—483 **11 Claims**



1. A self-leveling boat trailer comprising:

a support platform adapted to receive the hull of a boat, said support platform including a wheeled undercarriage and means for coupling a first end of said support platform to a vehicle;

flotation means disposed at a second end of said support platform for causing said second end of said support platform to float upon immersion into water; and

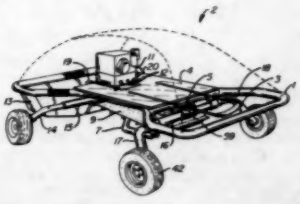
means for lowering said first end of said support platform in response to the flotation of said second end whereby said support platform is maintained in a level position.

4,395,186

VEHICLE FOR TENDING LOW GROWING VEGETATION

Garry R. Whyte, Portland, Oreg., assignor to Turtle Tractor Company, Portland, Oreg.

Filed Aug. 7, 1980, Ser. No. 176,193
Int. Cl.³ B60P *1/00*
U.S. Cl. 414—528 **1 Claim**



1. A powered vehicle for tending low growing vegetation comprising:

a frame having intersecting cross-braces;

a platform mounted to the frame having an engine mounted thereon;

front and rear center swing tubes having a torsion bar spring suspension and a double articulated steering system in which the torsion bars are held by a vise means, said vise means being surrounded by a collar, and said collar being wrapped in a stainless steel mesh screen, and glued to the interior of the swing tube; and

four legs, each adjustable in at least two directions and mounted within said swing tubes, having a motor connected by hydraulic lines to the engine, and supporting a wheel and tire.

4,395,187

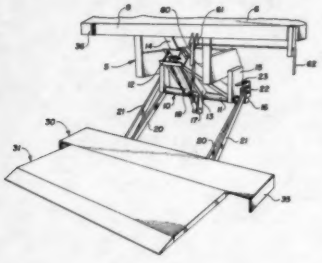
AUTOMATIC CARGO ELEVATOR FOR VEHICLE

Quentin D. Corley, Jr., 326 S. Rock Island, Dallas, Tex. 75207

Filed Oct. 24, 1980, Ser. No. 200,317

Int. Cl.³ B60P *1/48*

U.S. Cl. 414—557 **17 Claims**



14. In a cargo elevator for attachment to a cargo vehicle having a cargo bed; an elevator platform including a base platform and a folding platform hingedly attached to said base platform; said elevator platform being mounted, by means of said base platform, to be raised and lowered between a ground position and a bed position, with said base platform being maintained in a generally horizontal position during these movements; the improvement comprising

an articulated locking and folding mechanism connected between fixed pivots on said base platform and said folding platform, for effecting the locking of said folding platform in the plane of said base platform, and for effecting the downward folding and unfolding of said folding platform; said mechanism including an actuator lever;

said actuator lever being engageable with an actuator arm on said vehicle, during upward movement of said elevator platform, to effect the folding of said folding platform from a load position to a stored position under said base platform and said cargo bed; and said engaged actuator lever and actuator arm effecting the unfolding of said folding platform to said load position, during downward movement, of said elevator platform and effecting the locking of said folding platform in said load position.

4,395,188

LOAD CARRYING ARRANGEMENT FOR A LIFT TRUCK

Otmar Kaup, Aschaffenburg, Fed. Rep. of Germany, assignor to Kaup & Co. KG, Aschaffenburg, Fed. Rep. of Germany

Filed Apr. 29, 1981, Ser. No. 258,796

Claims priority, application Fed. Rep. of Germany, May 12, 1980, 3007899

Int. Cl.³ B66F *9/18, 9/14*

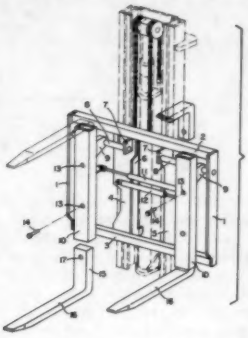
U.S. Cl. 414—622 **9 Claims**

1. A load carrying arrangement for a lift truck having a frame, a mounting element displaceably mounted on said frame, and carrying means operable for engaging an object to be lifted,

comprising in combination:

two upright elongated members spaced apart from each other and connected at least with relation to said mounting element, wherein each of said upright members defines a passage extending longitudinally of the respective upright member, and

means near an end portion of each upright member for releasably securing said carrying means to said upright



member, wherein said releasably securing means includes two mounting projections on said carrying means each extending through one end into one of said passages, and means for positionally fixing said projections in said passages, and

wherein said carrying means includes a pair of fork prongs each having a load-engaging portion and a mounting portion constituting said projection and adapted to be selectively introduced into the respective passage through one of its lower and upper ends.

4,395,189

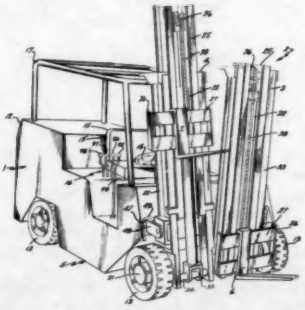
DUAL MAST LIFT TRUCK FOR UNBALANCED LOADS AND THE LIKE

Gerard H. Munten, 4089 Remembrance Rd., Grand Rapids, Mich. 49504

Filed Feb. 2, 1981, Ser. No. 230,611

Int. Cl.³ B66F *9/03, 9/22*

U.S. Cl. 414—635 **18 Claims**



1. In a conventional lift truck having a frame with front and rear ends, and means for propelling said truck, the improvement of a dual mast arrangement for handling unbalanced loads and the like, comprising:

first and second lift masts connected with the front end of

said truck frame in a side-by-side relationship; each lift mast having a fork slideably connected therewith for translating up and down its respective mast; said forks extending generally outwardly from said masts in a generally parallel relationship;

means for independently moving said forks along their respective masts, whereby each fork is individually elevated into abutment with a load, and raised slightly to a position wherein the load is balanced on said forks; and

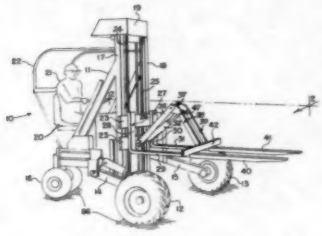
coupling means for selectively interlocking said forks and moving the same in unison, substantially simultaneously at the same rate and in the same direction, by manipulation of a single control, whereby said forks are raised together to lift the load balanced thereon to a transport position, and are lowered together to set the load down in place.

4,395,190

POWER OPERATED EXTENSIONS FOR FORKS OF A FORK LIFT TRUCK

John Barchard, Crystal Lake, Ill., assignor to Spyder Sales & Service, Inc., Needville, Tex.

Filed Mar. 3, 1981, Ser. No. 240,121
Int. Cl.³ B60P *1/46*
U.S. Cl. 414—664 **1 Claim**



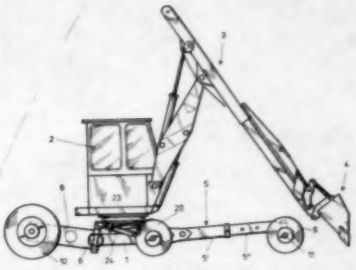
1. Power operated fork extensions for a lift truck in which a pair of forwardly projecting regular conventional forks mounted on a carriage are capable of being raised and lowered relative to a vertical mast, comprising a sleeve telescopically engaging each of the regular conventional forks of the lift truck, said sleeves constituting members which convert the conventional load carrying regular conventional forks to extensible load carrying members, a cross member fixedly adjoining the sleeves at their rearward ends, said carriage having a pair of spaced apart lugs, a transverse shaft supported in said spaced apart lugs, a pair of laterally spaced apart links journally supported at their lower ends on said transverse shaft, a cross shaft joining the upper ends of said pair of links, a pair of laterally spaced apart bell-crank lever links pivotally mounted at their upper ends on said cross shaft, said cross member having a pair of spaced apart lugs on its rear surface, said pair of bell-crank lever links pivotally mounted at their lower ends to the spaced apart lugs on the cross member, said bell-crank lever links each having an upper portion and an angularly disposed lower portion, a rod affixed between said bell-crank lever links at the juncture between the upper and lower portions, an extensible and retractable hydraulic cylinder having its upper end pivotally mounted on said rod between said bell-crank lever links and having its lower end pivotally mounted on said transverse shaft, whereby when the hydraulic cylinder is extended the bell-crank lever links act to push or extend the sleeve extensions forwardly and when the hydraulic cylinder is shortened the bell-crank lever links act to retract the sleeve extensions.

4,395,191

EXCAVATOR-HOIST CONSTRUCTION VEHICLE

Josef Kaiser, Heuwies 65, FL-9491 Schaanwald, Liechtenstein

Filed Dec. 11, 1980, Ser. No. 215,403
Claims priority, application Austria, Dec. 24, 1979, 8138/79
Int. Cl.³ B66F *9/00*
U.S. Cl. 414—694 **13 Claims**



1. An excavator-hoist construction vehicle comprising an undercarriage arranged generally horizontally, said undercarriage having a front edge and an oppositely directed rear edge with side edges extending between said front and rear edges, a superstructure mounted on said undercarriage and rotatable relative thereto about a vertical axis, an elongated boom having a first end and a second end with the first end thereof secured to said superstructure and the second end thereof spaced outwardly from said superstructure, the second end of said boom arranged to support a tool such as for use in excavating, hoisting and the like, a pair of first supporting legs each having a first end and a second end with the first end of each leg being hinged to said front edge of said undercarriage with said hinged connections being spaced apart, and the second ends of said first supporting legs spaced outwardly from said undercarriage, a pair of second support legs each having a first end and a second end with the first end of each being hinged to the rear edge of said undercarriage with the hinged connections being spaced apart and the second ends thereof being spaced outwardly from said undercarriage, said first and second supporting legs being movably adjustable in vertical and horizontal planes, means on the second ends of each of said first and second supporting legs for supporting a wheel, means for steering wheels on at least one pair of said first and second supporting legs, and said steerable wheels being detachably mounted on said supporting legs and being replaceable by holding members depending on the type of work to be performed by the construction vehicle, and means for driving at least one of the wheels on said first and second supporting legs.

4,395,192

BOOM CYLINDER

Paul W. Schlafly, New Philadelphia, Ohio, assignor to The Warner & Swasey Company, Cleveland, Ohio

Filed Jan. 19, 1981, Ser. No. 227,020
Int. Cl.³ E02F *3/00*
U.S. Cl. 414—718 **6 Claims**

1. A material handling vehicle comprising:

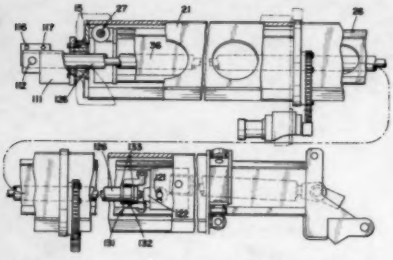
an upper structure;

an outer boom rotatable about its longitudinal axis;

an inner boom rotatable with said outer boom about their common longitudinal axis and partially disposed for telescopic positioning within said outer boom and said inner boom supporting a material handling device at its exposed end;

a boom cradle, pivotally supported from said upper structure, supporting said outer boom for rotation about its longitudinal axis;

a hydraulic cylinder, not rotatable with said outer boom, having one end connected to said boom cradle and having operating rod means extending from the other end thereof which engages and permits said inner boom to rotate around its longitudinal axis with respect to said hydraulic



cylinder and for telescopic positioning of said inner boom with respect to said outer boom; and,

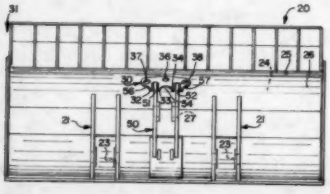
a cylinder support, longitudinally fixed in close proximity to the rod end of said cylinder, providing support for the end of said cylinder from the inside of said inner boom.

4,395,193

MATERIAL HANDLING BUCKET

Robert B. Christensen, Kenosha, Wis., and Lee F. Kramer, Waukegan, Ill., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed Apr. 3, 1981, Ser. No. 251,004
Int. Cl.³ B66F 9/06
U.S. Cl. 414—722 **11 Claims**



1. In a material handling bucket having generally vertical sides end capping a generally hyperbolic shaped bucket bowl, a transverse channel member means externally mounted to an upper forward edge of the bucket bowl for reinforcing the edge, two pairs of symetrically positioned outboard bucket bowl reinforcement ribs having boom arm pin bearing mounting means for pivotally mounting the bucket to a pair of vertical swingable boom arms, at least one pair of inboard bucket bowl reinforcement ribs having bucket tilting link pin bearing mounting means for pivotally mounting a hydraulic ram powered bucket tilting link to the bucket on a transverse link pin axis parallel to and above the boom pin axis, the three pairs of bucket bowl reinforcement ribs extending on parallel planes and transversely uniformly spaced-apart between the vertical sides of bucket bowl reinforcement ribs having upper terminal end portions mounted to the channel member means; and, wherein the improvement comprises:

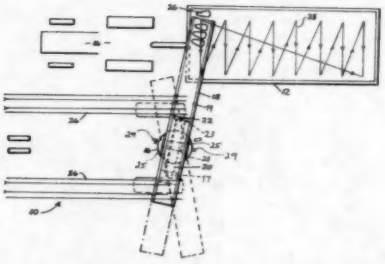
an oblong stress distributing plate means having at least one portion of reduced cross-sectional area defining at least one stress concentration point offset toward an upper longer side of the plate means from a predetermined midpoint of the plate means and having a lower longer side symetrically connected to the upper terminal end portions of the inboard pair of bucket bowl reinforcement ribs and to the channel member means for distributing stresses transversely across the plate means transmitted to the stress concentration point from the upper terminal end portions acting upon the channel member means in response to operation of the hydraulic ram powered bucket tilting link; said stress distributing plate means is generally elliptical in shape, and said portion of reduced cross-sectional area is a circular hole centered on the ordinate or minor axis of the ellipse and is spaced upwardly toward an upper longer curved side of the generally elliptical shaped stress distributing plate means from the abscissa or major axis of the ellipse; and connecting means are provided in a lower longer curved side of the generally elliptical shaped stress distributing plate means for mounting the terminal end portions thereto.

4,395,194

METHOD OF HANDLING HARVESTED MATERIAL

John C. Green, Ely, England, assignor to Hassy Horticultural Development Ltd., Cambridgeshire, England

Division of Ser. No. 111,096, Oct. 1, 1980, abandoned. This application Mar. 12, 1981, Ser. No. 242,993
Claims priority, application United Kingdom, Mar. 5, 1979, 7907585
Int. Cl.³ B65G 67/08, 67/22
U.S. Cl. 414—786 **5 Claims**



1. A method of handling material harvested by a first vehicle and transferring it to a second vehicle moving alongside the first vehicle comprising the steps of loading the material on a conveyor arranged on the first vehicle with its conveying direction at an oblique angle to a direction of motion of the vehicles, advancing the two vehicles at differential speeds and simultaneously both reciprocating the conveyor along its conveying direction and driving the conveyor to advance the harvested material to the second vehicle.

4,395,195

SHROUD RING FOR USE IN A GAS TURBINE ENGINE

Anthony R. De Cosmo, Wallingford, and John H. Young, South Windsor, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

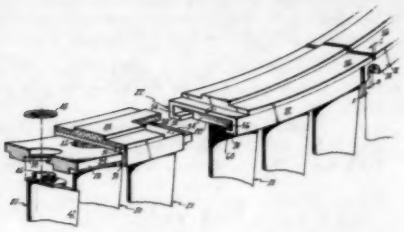
Filed May 16, 1980, Ser. No. 150,489
Int. Cl.³ F01D 25/26
U.S. Cl. 415—137 **13 Claims**

1. For a gas turbine engine of the type having a stator structure outward of a flow path for working medium gases, rotor structure inward of the flow path for working medium gases and an array of stator vanes extending inwardly across the flow path from the outward stator structure into proximity with the inward rotor structure, an improved shroud ring for supporting the inward ends of the vanes and a seal member radially outwardly of the rotor structure, wherein the improvement comprises:

a first ring formed of a plurality of segments extending circumferentially, each segment spaced from an adjacent segment leaving a gap therebetween and each segment

engaging at least two stator vanes at the inward end of the stator vane to support the stator vanes in guided cantilever fashion, each segment being adapted by a hole at each vane to receive the vane;

a second ring inwardly of the first ring, the second ring formed of a plurality of segments, each segment slidably engaging in the circumferential direction a corresponding segment of the first ring and each segment having an inner wall extending inwardly of the corresponding segment of



the first ring to cover at least one of said holes in the corresponding segment which adapt said corresponding segment of the first ring to receive the stator vanes for blocking the leakage of working medium gases between the vanes and the first ring;

wherein the sliding engagement between the first ring and the second ring enables the stator structure to position the second ring radially about the rotor structure in response to inward and outward movement of the stator structure.

4,395,196

TURBINE SHROUD HONEYCOMB MATRIX MECHANICAL LOCKING STRUCTURE AND METHOD

John R. Plautz, 18061 Parke La., Grosse Ile, Mich. 48138

Filed May 5, 1980, Ser. No. 146,389
Int. Cl.³ F01D *11/08*
U.S. Cl. 415—174 **1 Claim**

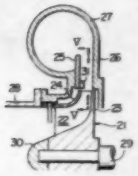
1. A shroud for a turbine engine or the like comprising an arcuate base member having a convex side with a convex surface and a concave side with a concave surface including means for securing the shroud to a turbine engine casing, a six-walled, two ended cell, honeycomb structure secured to the base on the concave side thereof, a matrix of abradable material within the honeycomb structure, and mechanical locking means operable between the honeycomb structure and abradable matrix material for securing the abradable matrix material within the honeycomb structure including portions of at least some of the walls of the cells being deformed transversely only between and in spaced relation to the ends of the cells so as to extend into the cells and comprising split and deformed portions of walls of the cells extending into the abradable matrix material wherein the split and deformed portions of the honeycomb structure are deformed in a diamond configuration with the center of the diamond configuration split substantially parallel to the concave surface of the base and the upper and lower portions of the diamond shaped deformed portion of the honeycomb material extend in opposite directions into adjacent cells with their maximum deformation appearing at the split center of the diamond configuration.

4,395,197

CENTRIFUGAL FLUID MACHINE

Yoichi Yoshinaga, Minorimachi; Hideo Nishida, Shimoinayoshi, and Shinjiro Ueda, Kashiwa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 22, 1980, Ser. No. 171,268
Claims priority, application Japan, Aug. 1, 1979, 54-97273
Int. Cl.³ F01D *1/02, 9/00;* F04D *29/44, 29/54*
U.S. Cl. 415—211 **4 Claims**



1. A centrifugal fluid machine comprising:

an impeller having an outlet;

a diffuser having performance characteristics of the vaneless diffuser type located around the outlet of said impeller and including a pair of opposed, but spaced annular diffuser plates having respective inner surfaces which define a diffuser channel therebetween, said diffuser channel having an inlet continuous to the outlet of said impeller and an outlet radially remote therefrom; and

a plurality of guide vane means, provided in a circular array on at least one of said inner surfaces of said pair of diffuser plates in a manner extending from a position within the inlet of said diffuser channel contiguous with the outlet of the impeller toward the outlet of said diffuser channel to a position which does not exceed about one-half the distance between said inlet and outlet of the diffuser channel in a region of a low flow angle portion of fluid flow introduced into the diffuser channel from the impeller outlet by said impeller, for guiding only said low flow angle portion of the fluid flow from the outlet of the impeller, said guide vane means each having a height, corresponding substantially to that of the low flow angle flow region, $\frac{1}{4}$ to 1/5 the spacing between said pair of diffuser plates.

4,395,198

CONTINUOUS TWIN-STAY COLUMNS FOR BULB HYDRAULIC TURBINES

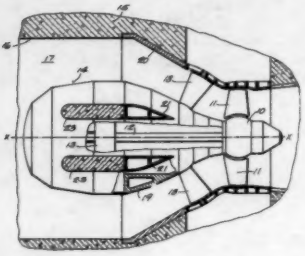
Thomas R. Schucker, York, Pa., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Dec. 7, 1981, Ser. No. 327,926
Int. Cl.³ F04D *29/40*
U.S. Cl. 415—219 R **4 Claims**

1. A support structure for a hydraulic turbine having a rotatably mounted runner having a generally horizontal axis of rotation with a rotatable drive shaft affixed to one end of said runner and extending axially therefrom; said shaft terminating in a generator unit remote from said runner; a stationary bulb housing adjacent said runner and enclosing said drive shaft and generator unit; a duct wall surrounding said runner and bulb housing and cooperating with said runner and bulb housing to define a hydraulic passage; said bulb housing including an inner stay cone axially disposed along said drive shaft between said generator unit and said runner; said inner stay cone being perpendicular to said shaft; an outer stay cone embedded in said duct wall and coplanar with said inner stay cone; the improvements comprising:

a pair of vertical stay columns extending through said bulb housing with said drive shaft extending between said stay

columns; each of said columns being affixed to said outer stay cone beneath said bulb housing and extending vertically through said inner stay cone in said bulb housing and being affixed to said outer stay cone above said bulb housing; said vertical stay columns being affixed to said inner stay cone where said columns pass through said inner stay cone; and,



a pair of bottom vertical piers adjacent said stay columns remote from said runner; said bottom vertical piers being integral with said duct wall beneath said bulb housing and extending vertically upward into communication with said bulb housing.

4,395,199

CONTROL METHOD OF A SYSTEM OF INTERNAL COMBUSTION ENGINE AND HYDRAULIC PUMP

Eiki Izumi; Hiroshi Watanabe; Yukio Aoyagi, all of Chiyoda; Kazuo Honma, Amimachi, and Kichio Nakajima, Shimoinayoshi, all of Japan, assignors to Hitachi Construction Machinery Co., Ltd., Tokyo, Japan

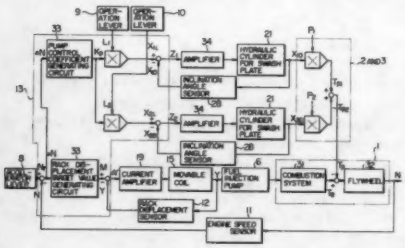
PCT No. PCT/JP80/00247, § 371 Date Jun. 15, 1981, § 102(e) Date Jun. 15, 1981, PCT Pub. No. WO81/01031, PCT Pub. Date Apr. 16, 1981

PCT Filed Oct. 14, 1980, Ser. No. 276,367

Claims priority, application Japan, Oct. 15, 1979, 54-131846; Mar. 14, 1980, 55-31584; Mar. 14, 1980, 55-31585; May 13, 1980, 55-62309

Int. Cl.³ F04B *49/00*

U.S. Cl. 417—53 **12 Claims**



1. A method of controlling a system for generating hydraulic power, the system including an internal combustion engine controlled by fuel injection by a fuel injection pump, and a plurality of hydraulic pumps of the variable displacement type driven by the internal combustion engine, the method comprising the steps of calculating a difference between a target engine speed set by a manipulated variable of an accelerator for the internal combustion engine and an output engine speed to obtain an engine speed deviation; converting the engine speed deviation into a pump control coefficient which is in a functional relation with the engine speed deviation, performing a calculation with the converted pump control coefficient and an externally manipulated variable for inclination of a swash plate of the hydraulic pumps, and inputting the calculated value to a regulator of the hydraulic pump as a target value for inclination of the swash plate thereof to thereby control the inclination angle of the swash plate of the hydraulic pumps; and simultaneously converting said engine speed deviation into a rack displacement value which is in a functional relation with the engine speed deviation, and adjusting rack displacement of the fuel injection pump by the converted value to thereby control the amount of fuel injection.

4,395,200

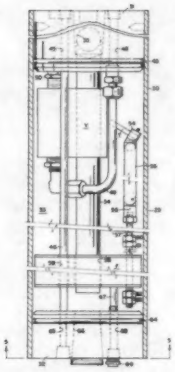
DOWNHOLE OIL WELL PUMP

David S. Anthony, and Michael D. Anthony, both of 1235 W. Laurel, San Antonio, Tex. 78201

Filed Dec. 22, 1980, Ser. No. 218,778

Int. Cl.³ F04F *1/06*

U.S. Cl. 417—131 **1 Claim**



1. An automatic gas operated downhole fluid pump, comprising:

an elongated cylindrical chamber for receiving fluid and having a concentrically mounted cylindrical float with a predetermined buoyancy and weight mounted therein for vertical reciprocating movement in said cylindrical chamber responsive to rising and falling of fluid in said cylindrical chamber;

a valve operably connected with the cylindrical float to automatically communicate a source of pressurized gas with the cylindrical chamber for injecting pressurized gas into the cylindrical chamber when fluid in the cylindrical chamber rises and moves the cylindrical float upwardly in the cylindrical chamber to a predetermined height to force the fluid from the cylindrical chamber;

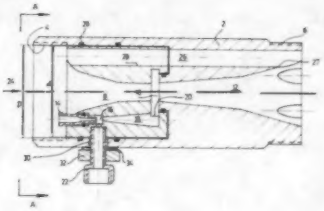
said valve having an actuator biased and retained in either an open or closed position and actuable to either the open or closed position upon movement of the cylindrical float within the cylindrical chamber as the fluid rises and falls to predetermined levels;

said cylindrical float being connected with the valve actuator by a lost motion connector including a vertically disposed elongated control rod connected at one end with the valve actuator and extending through a passageway through the cylindrical float with spaced adjustable tap means to adjustably connect the control rod with the cylindrical float to apply force to the actuator only when it is desired to actuate the valve;

said elongated cylindrical chamber being formed from a cylindrical housing enclosed by upper and lower cap members;

an air supply line extending between the upper and lower cap members to supply air between pump stages;
an oil discharge line being provided within the cylindrical chamber for flowing fluid from the cylindrical chamber during pumping;
said cylindrical float including passageways therethrough which are slidably mounted upon the air supply line and the oil discharge line; and
said lower cap member including an adjustable stop member to allow the cylindrical float to move to a predetermined lower limit within the cylindrical chamber.

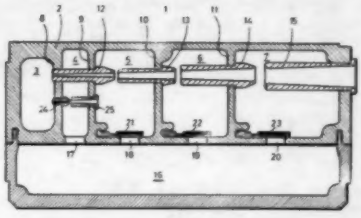
4,395,201
INJECTOR PUMP
Dan Bron, 36 Palmach St., Haifa, Israel
Filed Feb. 2, 1981, Ser. No. 230,750
Claims priority, application Israel, Feb. 21, 1980, 59439
Int. Cl.³ F04F 5/22
U.S. Cl. 417—169 **13 Claims**



1. An in-line, two-stage, variable-bypass injector pump for controllably admixing a secondary fluid to a main fluid, comprising:
a housing connectable into a pipe line carrying said main fluid;
a main venturi extending along the central axis of said housing and comprising an entrance, throat and exit portion,
a secondary venturi off center but substantially parallel to said central axis, comprising an entrance, throat and exit portion which exit portion leads into the throat portion of said main venturi;
a connector, one end of which leads into the throat portion of said secondary venturi and the other end of which is connectable to a source of said secondary fluid;
at least one passageway located off center with respect to said main venturi and designed to permit a variable proportion of said main fluid to flow from one end of said housing to the other end thereof, while bypassing said main venturi, and
shutter means to control said bypassing flow between a maximum and zero flow,
wherein, by selectively creating a misalignment between at least two different portions of said passage way, a variable constriction is produced in said passage way, which constriction, when maximum, results in zero bypass flow and, when zero, results in maximum bypass flow.

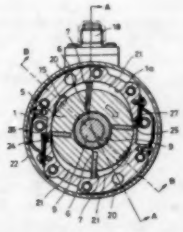
4,395,202
MULTI-EJECTOR
Peter Tell, Österskär, Sweden, assignor to AB Piab, Sweden
Filed May 18, 1981, Ser. No. 264,941
Claims priority, application Sweden, May 21, 1980, 8003819
Int. Cl.³ F04F 5/22
U.S. Cl. 417—169 **5 Claims**

1. An ejector comprising a housing enclosing a plurality of chambers arranged in series and separated from a vacuum collecting compartment by a partition, said plurality of chambers comprising a first chamber, which is a pressure supply chamber, separated from a second chamber by a first wall, and at least one other chamber, said other chamber being separated from said second chamber by a second wall and having a third wall spaced from said second wall,
at least one first plurality of nozzles arranged in series in a flow direction from said first chamber to said other chamber, including a first nozzle extending through said first and second walls from said first chamber to said other chamber, and a second nozzle extending through said third wall from said other chamber,
at least one second plurality of nozzles arranged in series in a flow direction from said first chamber to said other chamber, said second plurality of nozzles being spaced from said first plurality of nozzles, including a first nozzle



extending through said first wall from said first chamber to said second chamber, and a second nozzle extending through said second wall from said second chamber to said other chamber,
a plurality of ports extending through said partition from said vacuum collecting compartment to selected of said chambers, including a first port extending from said compartment to said second chamber and a second port extending from said compartment to said other chamber, and,
at least one check valve, said check valve positioned in said other chamber and associated with said second port.

4,395,203
VANE COMPRESSOR HAVING A DISCHARGE RATE CONTROL
Haruhiko Takada, Konan, Japan, assignor to Diesel Kiki Co., Ltd., Tokyo, Japan
Filed Mar. 26, 1981, Ser. No. 247,780
Claims priority, application Japan, Mar. 29, 1980, 55-41074
Int. Cl.³ F04B 49/06
U.S. Cl. 417—282 **6 Claims**



1. In a vane compressor including: a rotary shaft; a rotor rotatably fitted on and secured to said rotary shaft, said rotor having an outer peripheral surface thereof formed with a plurality of axial slits; a plurality of vanes radially movably received in said axial slits; a housing within which said rotor and said vanes are accommodated, said rotor, vanes and housing cooperating with each other to define pump working chambers therebetween; and a fluid suction passage communicating with the pump working chambers to guide fluid thereinto from the

outside of said compressor; wherein rotation of said rotor which takes place in unison with rotation of said rotary shaft causes a pumping action of said fluid;

the improvement which comprises:

valve means disposed to close part of said fluid suction passage for controlling the rate at which said fluid is introduced into said pump working chambers;

valve driving means coupled to said valve means for controlling the closing action of said valve means;

a sensor disposed to detect the rotation rate (r.p.m.) of said rotor;

and

electronic control means coupled to said sensor and to said valve driving means and being responsive to an output of said sensor for controlling the operation of said valve driving means, said electronic control means controlling said valve driving means to drive said valve means so as to vary the opening of said part of said fluid suction passage, as a function of a value of the rotation rate (r.p.m.) of said rotor detected by said sensor.

4,395,204

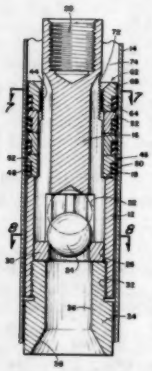
OIL WELL PUMP

Richard L. Turner, Rte. 2, Box 138, Broken Arrow, Okla. 74012

Filed Oct. 7, 1980, Ser. No. 194,781

Int. Cl.³ F04B *21/04*

U.S. Cl. 417—554 **2 Claims**



1. A subsurface well pump for disposition within a working barrel of a well bore and arranged for reciprocal movement therebetween, said pump comprising housing means having a chamber provided in one end thereof in communication with a well fluid reservoir, ball check valve means secured to the housing means and disposed in the chamber to provide alternate open and closed positions for the pump during operation thereof, said chamber having one end thereof closed for limiting the movement of the ball in one direction during opening of the ball check valve means, passageway means provided in said housing means and having one end in communication with the chamber and the opposite end open to an annulus between the housing means and the working barrel for elevation of the well fluid to the surface of the well during operation of the pump, sealing means removably secured to the outer periphery of the housing means above the closed end of the chamber and in sealing engagement with the outer periphery of the housing means and the inner periphery of the working barrel for sealing the annulus from the well fluid reservoir, said sealing means comprising a plurality of substantially identical sealing ring assemblies disposed in stacked relation around the outer periphery of the housing means, each of said sealing ring assemblies comprising a flanged sleeve disposed around the outer periphery of the housing means and having a resilient sealing member secured around the outer periphery thereof for sealing engagement with the inner periphery of the working barrel, and follower assembly means removably secured to the housing means and engagable with the uppermost sealing ring assembly for securely locking the sealing ring assemblies around the housing means, and wherein the outer periphery of the resilient sealing members is of a stepped configuration for an efficient sealing with reduced wear of the sealing members, and wherein the resilient sealing members are provided with an annular chamber around the inner periphery thereof for receiving fluid therein to enhance the sealing qualities thereof, and wherein the flanged sleeves are provided with a plurality of circumferentially spaced radially extending bores in communication with the chamber of the sealing rings for directing fluid thereto, and said housing means is provided with longitudinally extending passageways cooperating with the radially extending bores to provide fluid inlet passages for the chamber of the sealing rings.

4,395,205

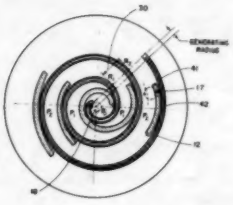
MECHANICALLY ACTUATED TIP SEALS FOR SCROLL APPARATUS AND SCROLL APPARATUS EMBODYING THE SAME

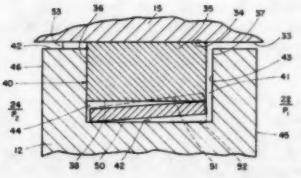
John E. McCullough, Carlisle, Mass., assignor to Arthur D. Little, Inc., Cambridge, Mass.

Filed Feb. 12, 1981, Ser. No. 233,915

Int. Cl.³ F01C *19/08*; F16F *1/08*; F16J *15/16*; B23P *15/00*

U.S. Cl. 418—55 **13 Claims**





1. A method of making an axially biasing spring element for a tip seal element in an involute scroll fluid moving apparatus, including a scroll member having an involute curved channel including a bottom wall and at least one side wall extending along the axial end of the scroll member, said tip seal element being of involute configuration and normally disposed at least partially in said channel above said bottom wall for axial movement therein, comprising the steps of:

(a) forming an involute curved sheet metal spring element from spring metal so that the thickness of the sheet metal element all lies in substantially the same plane in its relaxed state, with the pitch of the involute curve of the spring element being greater than that of the channel, the width of the spring element being substantially greater than its thickness and less than the width of the channel;

(b) deforming the spring element by bending it in its own plane so that the pitch of its involute curve matches that of the channel, the deformation not exceeding the elastic

limit of the sheet metal material and causing said spring element to assume a coned angle along its length; and

(c) placing the deformed spring element in the channel adjacent the bottom wall of the channel.

7. A method of making a tip seal in an involute scroll fluid apparatus including a scroll member having an involute curved channel including a bottom wall and at least one side wall extending along the axial end of the scroll member, and a tip seal element normally disposed at least in part in said channel above said bottom wall for axial movement therein, comprising the steps of:

(a) forming the tip seal element so that it has an involute curved configuration substantially matching that of the channel;

(b) forming the length of the tip seal element so that it is shorter at its inner end than said channel and longer at its outer end than said channel; and

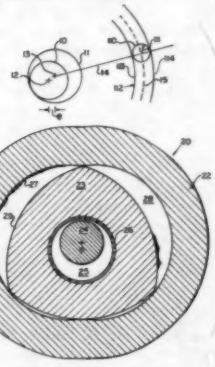
(c) placing the seal element in the channel in its normal, relaxed condition and subsequently torqueing it within the channel to force the inner and outer ends into the channel and to therefore provide a circumferential load on the seal element against a side wall of the channel.

4,395,206

SEAL COMPENSATED GEOMETRY ROTARY MOTION DEVICE

Benjamin Hoffmann, Minneapolis, Minn., assignor to Trochoid Power Corporation, Eden Prairie, Minn.

Filed Apr. 28, 1981, Ser. No. 258,429
Int. Cl.³ F01C *1/10, 1/22;* B23P *15/00, 15/10*
U.S. Cl. 418—61 A **24 Claims**



1. An improved trochoidal rotary device of the type comprising a first working member having a shaped peripheral profile surface derived from a conventional geometrically exact trochoidal curve formed from a predetermined base circle, generating circle, and generating arm length and a second working member having a shaped peripheral profile surface in the form of a conventional envelope curve derived from said conventional trochoidal curve, said second working member profile having a plurality of apices at which are correspondingly mounted radially outward extending apex seals, said apex seals each having a sealing face profile for sealably engaging said profile surface of said first working member and being offset a predetermined distance from said envelope curve, said apex seals defining working chamber spaces between said first and second working members, wherein the improvement comprises:

said first working member profile surface is that of a modified trochoidal curve formed from said predetermined base circle and generating circle and a modified generating arm length comprising said predetermined generating arm length with a tracing disk centered on the tip thereof, said tracing disk having a radius equal to said predetermined distance, such that said first working member profile surface is radially recessed by said predetermined distance everywhere about the periphery thereof relative to said conventional trochoidal curve, and

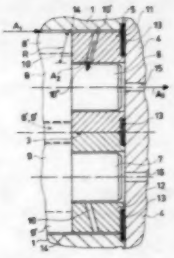
said second working member profile surface is that of a modified envelope curve derived from said modified trochoidal curve traced by said tracing disk such that said second working member profile surface is radially enlarged by said predetermined distance everywhere about the periphery thereof relative to said conventional envelope curve.

4,395,207

GEAR PUMP OR MOTOR WITH BEARING PASSAGE FOR SHAFT LUBRICATION

Erkki Mänttäri, and Matti Korpinen, both of Jyväskylä, Finland, assignors to Valmet Oy, Finland

Filed Oct. 16, 1980, Ser. No. 197,471
Claims priority, application Finland, Oct. 22, 1979, 793282
Int. Cl.³ F03C *2/08;* F04C *2/18, 15/00*
U.S. Cl. 418—102 **5 Claims**



1. Gear pump and motor apparatus adapted to operate alternatively either as a pump or as a motor, comprising: a housing having a chamber defined therein, said chamber including a pair of superimposed substantially cylindrical portions defined by respective substantially cylindrical inwardly facing surfaces, said chamber portions intercommunicating with each other; a pair of parallely extending toothed gears situated in said housing chamber in meshing engagement with each other, each of said gears having an axial shaft fixed to and extending from at least one of its ends; a pair of bearing sleeves, each bearing sleeve being mounted in a respective chamber portion of said housing chamber and including a body having an inner face surface adapted to normally sealingly engage the end face of a respective gear, an opposed outer face surface, a substantially cylindrical outer peripheral surface having a diameter smaller than the diameter of said inwardly facing cylindrical surface of a respective cylindrical chamber portion and defining a space between it and said inwardly facing surface of the respective cylindrical chamber portion of said housing chamber, and a central opening which receives and supports a shaft of a respective one of said gears for mounting the latter in a respective portion of said housing chamber, and an oil supply bore formed through each bearing sleeve substantially in the plane which passes through the axes of said chamber portions, each bore opening at one end into the space defined by the outer peripheral surface of a respective bearing sleeve and the inwardly facing surface of a respective chamber portion and opening at its other end into the central opening of said bearing sleeve, and wherein the ratio of the length to the diameter of each of said oil supply bores being less than or equal to about 10, whereby oil is directed from said spaces defined between the peripheral surfaces of the bearing sleeves and the inwardly facing surfaces of the respective chamber portions through

said bores into said bearing sleeve openings to lubricate the gear shaft received therein.

4,395,208

ROTARY VANE COMPRESSOR WITH WEDGE-LIKE CLEARANCE BETWEEN ROTOR AND CYLINDER

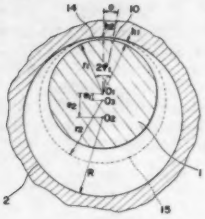
Teruo Maruyama, Neyagawa; Tatsuhisa Taguchi, Shiga, and Tadayuki Onoda, Toyonaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Apr. 7, 1981, Ser. No. 251,943

Claims priority, application Japan, Apr. 7, 1980, 55-45350

Int. Cl.³ F04C *18/00, 27/00, 29/02*

U.S. Cl. 418—102 **2 Claims**



1. A rotary vane compressor comprising:

a rotor member;

a plurality of vanes slidably mounted in corresponding sliding grooves in said rotor member;

a hollow cylinder in which said rotor member and vanes are rotatably mounted at a position eccentric to the cross-sectional center of the hollow interior of said cylinder;

end plates secured to opposite ends of said cylinder for closing the hollow interior to define a vane chamber therein;

said rotor member having a rotor head portion where the peripheral surface of said rotor member approaches the inner peripheral surface of the hollow interior of said cylinder for dividing the interior of said hollow interior into a fluid discharge side and a fluid suction side;

said cylinder having a seal portion at the position opposed to said rotor head portion at which the inner surface of said hollow interior has a cross-sectional shape lying on the arc of a seal circle having a radius of curvature smaller than the radius of curvature of the cross-section of the inner surface of the hollow interior on circumferentially opposite sides of said seal portion, said seal portion having a cross-sectional seal circle center lying between the cross-sectional center of said rotor member and the cross-sectional center of said hollow interior, and at a distance e_1 from said cross-sectional center of said rotor and having a radius $r_2=r_1+e_1+h_2$, where r_1 is the radius of said rotor member and h_2 is the minimum clearance at the seal portion, and e_1 has a value $0<e_1<e_2$, where e_2 is the distance between said cross-sectional centers of said hollow interior and said rotor member.

4,395,209

TIRE PRESS

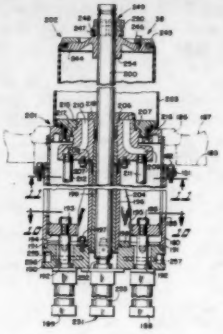
Anand P. Singh, Youngstown, Ohio, and Daniel Shichman, Trumbull, Conn., assignors to NRM Corporation, Akron, Ohio

Division of Ser. No. 255,733, Apr. 20, 1981, Pat. No. 4,338,069, which is a continuation-in-part of Ser. No. 138,658, Apr. 9, 1980, abandoned. This application May 7, 1982, Ser. No. 375,985

Int. Cl.³ B29H *5/02*

U.S. Cl. 425—33 **18 Claims**

1. A tire curing press assembly comprising mating mold sections, means to open and close said mold sections, a center mechanism including an inflatable shaping and curing bladder, bead grip means for engaging the interior underside of the upper bead of a green tire, and means for engaging and holding the tread of the green tire away from said bead grip means to



hold open the tire with the upper bead and tread held apart in fixed axial relation to one another to facilitate insertion of said bladder into the green tire.

4,395,210

APPARATUS FOR MANUFACTURE OF TURBULENCE MEMBER MADE OF SYNTHETIC RESIN

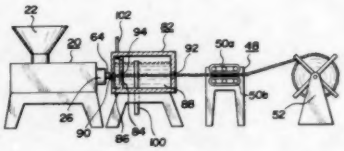
Mamoru Hama, Chino, Japan, assignor to Mihama Manufacturing Co., Ltd. and Kato Hatsujo Kaisha, Ltd., both of, Japan

Filed Nov. 20, 1981, Ser. No. 323,704

Claims priority, application Japan, Nov. 21, 1980, 55-164820

Int. Cl.³ B29C *17/00*

U.S. Cl. 425—71 **1 Claim**



1. In an apparatus for the manufacture of turbulence members made of a synthetic resin, which comprises:

(a) an extruding machine provided with an extrusion outlet for melting therein a synthetic resin by heat and extruding the molten resin out of said extrusion outlet,

(b) a rotary nozzle rotatably attached to the leading end of said extrusion outlet and provided with a slit for allowing the molten resin to be rotated around its axis and simultaneously extruded from said slit in the horizontal direction,

(c) a water vessel filled with water and tightly closed on the upper portion thereof for cooling and solidifying therein the molten resin extruded from said slit, and

(d) a drawing device for drawing the resin cooled and solidified in said water vessel,

the improvement wherein said water vessel is divided by a partition wall into a first relatively narrow cooling chamber and a second relatively wide cooling chamber,

the lateral wall of said first narrow cooling chamber on the rotary nozzle side, said partition wall and the lateral wall of said second wide cooling chamber on the drawing device side each being provided with an aperture of a diameter slightly larger than the outside diameter of the resin extruded from said slit so as to be aligned with one another,

said first narrow cooling chamber being connected to a water-supplying means, and

said second wide cooling chamber being connected to a suction pipe having the upper end thereof opening to the interior of said water vessel so as to be positioned at a higher level than the level of said apertures and having the lower end thereof connected to a suction pump.

4,395,211

METHOD AND DEVICE FOR MANUFACTURING A PLASTIC RECORD CARRIER

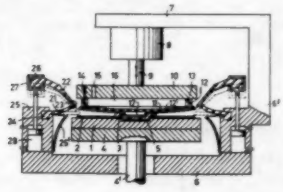
Egbert Broeksema, and Arnoldus A. Smeets, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 102,720, Dec. 13, 1979, Pat. No. 4,301,099. This application Jul. 27, 1981, Ser. No. 286,905

Claims priority, application Netherlands, Aug. 10, 1979, 7906117

Int. Cl.³ B29D *17/00*

U.S. Cl. 425—174.4 **4 Claims**



1. An apparatus for manufacturing a record carrier having a stratified structure and at least one data track, said apparatus comprising a mold having a surface with a pattern formed therein corresponding to the data track to be provided on the record carrier, means for supporting a planar, flexible substrate opposite said mold for movement towards and away from said surface, said mold having a cavity formed in the center of said surface for receiving a curable, fluid resin, said cavity being configured to mate with a central projection on the substrate so that upon movement of the substrate towards said mold, the projection enters said cavity and squeezes the resin in the cavity onto said surface, means for deforming said substrate into a convex form bulging toward said mold and for changing the configuration of said substrate from said convex to a planar form when said substrate contacts the resin on said surface as said substrate is moved towards said mold by said supporting means to thereby roll out the resin over said surface and means for covering the periphery of said substrate during curing of the resin.

4,395,212

SCREEN-CHANGE DEVICE FOR EXTRUDERS

Friedrich Lambertus, Stuttgart, Fed. Rep. of Germany, assignor to Werner & Pfleiderer, Stuttgart, Fed. Rep. of Germany

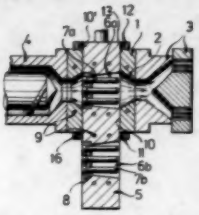
Filed Mar. 27, 1981, Ser. No. 248,329

Claims priority, application Fed. Rep. of Germany, Apr. 3, 1980, 3013038

Int. Cl.³ B01B *25/12*; B29F *3/02*

U.S. Cl. 425—185 **9 Claims**

1. Screening apparatus for molten plastic flowing from an extruder of plastic material, said screening apparatus comprising a housing adapted for being mounted on the extruder and having a feed channel for flow of plastic material from the extruder through said housing, a slide member, said housing having a borehole in which said slide member is slidably mounted with clearance, replaceable screen elements on said slide member for being discontinuously positioned in the path of the plastic material flowing from said extruder, and means for sealing the clearance between the slide member and said housing to prevent outflow of plastic material therefrom, said means comprising a flange on said housing surrounding said borehole and facing said slide member with a minimal gap therebetween to permit normal free sliding movement of said slide member, a cooling channel in said flange for flow of a coolant for cooling said flange to minimize said gap and to cool plastic material in said gap for solidifying said plastic material



to prevent outflow of plastic material from said gap, and thermal insulation means between said flange and said housing for preventing cooling of said housing by the cooling of said flange.

4,395,213

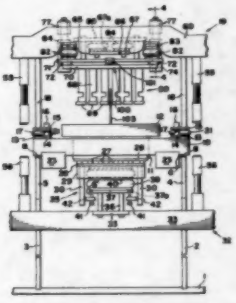
NOISE SUPPRESSING BLOCK MOLDING MACHINERY

Thomas W. Springs, Alpena, and William F. Wallis, Atlanta, both of Mich., assignors to Besser Company, Alpena, Mich.

Continuation of Ser. No. 952,634, Oct. 19, 1978, abandoned, which is a continuation-in-part of Ser. No. 713,920, Aug. 12, 1976, abandoned. This application Dec. 29, 1980, Ser. No. 220,792

Int. Cl.³ B28B *1/08*

U.S. Cl. 425—211 **1 Claim**

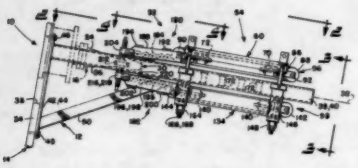


1. In blocking making machinery having a vibratable mold for the reception of moldable material, a head member movable into said mold for compacting moldable material therein, a frame member movable relatively to said mold in a direction toward the latter, and connecting means interposed between said frame member and said head member and connecting said head member to said frame member for movement with and relative to the latter, the improvement comprising first and second yieldable cushioning means forming part of said connecting means and arranged in opposition to one another thereby to apply a yieldable, cushioned force in each of two opposite directions on said head member; and means for increasing or decreasing the force applied on said head member by a selected one of either of said cushioning means and substantially simultaneously decreasing or increasing, respectively, the force applied on said head member by the other of said cushioning means, each of said cushioning means being inflatable and deflatable, and means for inflating and deflating said cushioning means in timed relation to movement of said head member into said mold.

4,395,214
FOAM EXTRUSION APPARATUS HAVING DOWNSTREAM UPPER AND LOWER HINGED SHAPING MEANS AND SIDE RESTRAINING MEANS

Arthur L. Phipps, Tallmadge, and Ben Stoyanov, Akron, both of Ohio, assignors to U.C. Industries, Tallmadge, Ohio

Filed Aug. 27, 1981, Ser. No. 297,036
Int. Cl.³ B29D 27/00; B29F 3/04
U.S. Cl. 425—214 37 Claims

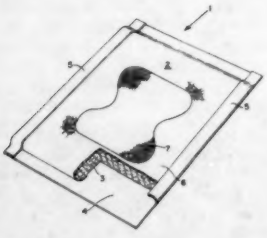


1. A foam extrusion apparatus comprising an extrusion die having a die orifice, opposed surface shaping members on respective opposite sides of the extrudate flow path downstream of said die orifice, opposed surface finishing members on respective opposite sides of the extrudate flow path downstream of said surface shaping members, first hinge means pivotally supporting the upstream ends of said shaping members adjacent said die orifice, second hinge means pivotally connecting the downstream ends of said shaping members to said finishing members, respectively, and means adjustably supporting said finishing members for movement toward and away from the extrudate flow path as well as for movement along the extrudate flow path.

4,395,215
FILM FORMING STRUCTURE FOR UNIFORMLY DEBOSSING AND SELECTIVELY APERTURING A RESILIENT PLASTIC WEB AND METHOD FOR ITS CONSTRUCTION

Delmar J. Bishop, Hamilton, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Feb. 2, 1981, Ser. No. 230,919
Int. Cl.³ B29C 17/04
U.S. Cl. 425—290 12 Claims



1. A method for constructing a three-dimensional forming structure for imparting a substantially continuous three-dimensional pattern of debossments, a predetermined portion of said debossments being apertured at preselected points along the surface of a heated plastic web subjected to a fluid pressure differential while in contact with the surface of said forming structure, said method comprising the steps of:

(a) forming at least one continuously apertured planar sheet exhibiting a first substantially continuous pattern of apertures corresponding to the debossments to be imparted to said web;

(b) forming a second selectively apertured planar sheet having an overall size and shape generally similar to said continuously apertured planar sheet, said selectively apertured planar sheet exhibiting a second pattern of apertures corresponding to the portions of said web to be debossed and apertured and a third pattern of smaller sized apertures corresponding to those portions of said web to be debossed without aperturing; and

(c) superposing said continuously apertured planar sheet on said selectively apertured planar sheet so that at least a portion of said apertures in said second and third patterns in said selectively apertured planar sheet are placed in fluid communication with said apertures in said continuously apertured planar sheet, whereby those portions of said selectively apertured planar sheet exhibiting said third pattern of fluid communicating apertures contact and provide support to said heated plastic web when said web is subjected to said fluid pressure differential, thereby preventing rupture of said web at said points of contact, while those portions of said selectively apertured planar sheet exhibiting said second pattern of fluid communicating apertures provide no support to said heated plastic web when said web is subjected to said fluid pressure differential, thereby permitting rupture of said web in areas coinciding with said second pattern of fluid communicating apertures.

9. A three-dimensional forming structure for imparting a substantially continuous three-dimensional pattern of debossments, a predetermined portion of said debossments being apertured at preselected points along the surface of a heated plastic web subjected to a fluid pressure differential while in contact with the surface of said forming structure, said forming structure comprising:

(a) at least one continuously apertured planar sheet exhibiting a first substantially continuous pattern of apertures corresponding to the debossments to be imparted to said web; and

(b) a second selectively apertured planar sheet having an overall size and shape generally similar to said continuously apertured planar sheet, said selectively apertured planar sheet exhibiting a second pattern of apertures corresponding to the portions of said web to be debossed and apertured and a third pattern of smaller sized apertures corresponding to those portions of said web to be debossed without aperturing, said continuously apertured planar sheet being superposed on said selectively apertured planar sheet so that at least a portion of said apertures in said second and third patterns in said selectively apertured planar sheet are placed in fluid communication with said apertures in said continuously apertured planar sheet, whereby those portions of said selectively apertured planar sheet exhibiting said third pattern of fluid communicating apertures contact and provide support to said heated plastic web when said web is subjected to said fluid pressure differential, thereby preventing rupture of said web at said points of contact, while those portions of said selectively apertured planar sheet exhibiting said second pattern of fluid communicating apertures provide no support to said heated plastic web when said web is subjected to said fluid pressure differential, thereby permitting rupture of said web in areas corresponding with said second pattern of fluid communicating apertures.

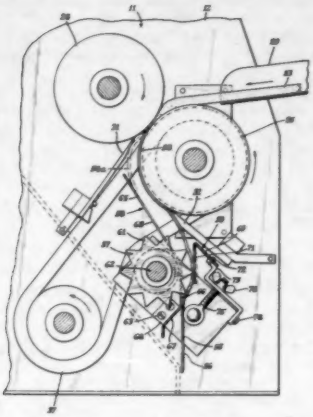
4,395,216
DOUGH PERFORATOR

Richard J. Anetsberger, and John A. Anetsberger, both of Northbrook, Ill., assignors to Anetsberger Brothers, Inc., Northbrook, Ill.

Filed Dec. 2, 1981, Ser. No. 326,608
Int. Cl.³ B29C 17/08; A21C 11/10
U.S. Cl. 425—290 8 Claims

4. In a dough sheeter having rollers for sheeting a dough piece, and drive means for rotating said rollers; dough sheet perforator means, comprising an axially aligned and spaced set of dough sheet perforator members rotated by said drive means, means for guiding a dough sheet into contact with said

perforator members, and a backup unit including sheet metal spring members individually cooperating with said perforator members to effect lineal scraping thereagainst of the latter,



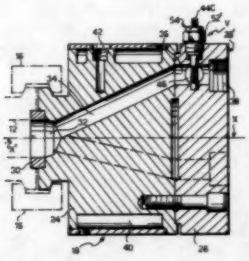
whereby spaced apertures are formed completely through a dough sheet to prevent forming of any aperture-closing membranes thereover.

4,395,217

ADAPTOR FOR EXTRUDING A PLURALITY OF STREAMS OF SYNTHETIC THERMOPLASTIC FOAM SIMULTANEOUSLY FROM A SINGLE EXTRUDER

Alberto Benadi', Turin, Italy, assignor to Lavorzaione Materie Plastiche L.M.P. S.p.A., Turin, Italy

Filed Dec. 10, 1981, Ser. No. 329,472
Claims priority, application Italy, Dec. 19, 1980, 68950 A/80
Int. Cl.³ B29D *27/00*; B29F *3/04*
U.S. Cl. 425—382 R **3 Claims**



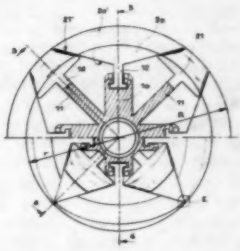
1. A synthetic thermoplastic foam extruder comprising a barrel, injection means for injecting a foaming agent into said barrel and an adapter for extruding a plurality of streams of thermoplastic synthetic foam simultaneously from said extruder, comprising: a body having at one end means for attaching said body to said barrel of said extruder in axial alignment therewith; a manifold chamber formed frontally in said one end to receive the thermoplastic mass from said barrel; a plurality of ducts formed in said body, radiating from said manifold chamber and opening on the opposite of said body, each of said ducts terminating with attachment means for a respective extrusion head; a butterfly valve in each of said ducts and means for locking each of the valves individually in a desired angular position, each butterfly valve being comprised of a disc member having a median transverse section in the form of a rhomboid with the two opposing obtuse angles rounded off and with the two opposing acute angles being not greater than 60° and having a dimension measured along the axis of rotation which is 60–80 percent of the corresponding dimension of the duct whereby in the position of maximum closure said butterfly valve cuts off at least 70 percent but not more than 90 percent of the flow cross section of the respective duct.

4,395,218

MECHANICAL EXPANSION PLUG FOR THE INTERNAL CALIBRATION OF PLASTIC MATERIAL TUBES IN GENERAL, PARTICULARLY FOR FASHIONING THE SEATS FOR GASKETS

Neri Ermes, Bagnacavallo (RA), Italy, assignor to S.I.C.A. Serrande.Infissi.Carpenteria.Attrezzatura S.p.A., Alfonsine (RA), Italy

Filed Oct. 23, 1981, Ser. No. 314,222
Claims priority, application Italy, Nov. 14, 1980, 3570 A/80
Int. Cl.³ B29C *17/00*
U.S. Cl. 425—392 **5 Claims**

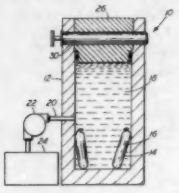


1. Mechanical expansion plug for the internal calibration of plastic material tubes in general, particularly for fashioning the seats for gaskets, comprising a tubular extending body that can be inserted inside the tube to be machined and has a circumferential aperture along its lateral surface, characterized by the fact that it comprises: a movable element of truncated cone conformation, supported and able to slide, in the two directions, inside the said body, coaxially thereto, without the possibility of one rotating with respect to the other, under the action of operating means, the said element being provided, peripherally, at equal angular spacing one from the other, with a first and second set of guides that extend along generatrices of the said element, alternate, and slope with respect to the longitudinal sliding axis; a first plurality of sectors of circular conformation, movable radially inside the said circumferential aperture, virtually triangular when viewed along a radial section of the said body, bent externally to conform to the maximum circumference of the seat to be fashioned in the tube, and provided internally with a first tailpiece that can be coupled to a corresponding guide in the aforementioned first set; and a second plurality of sectors, also movable radially inside the said aperture, virtually trapezoidal when viewed along a radial section, bent externally to conform to the said maximum circumference, placed alternately with respect to the corresponding sectors of the said first plurality with their lateral sloping surfaces mating, and provided internally with a second tailpiece that can be coupled to the corresponding guides of the said second set, the latter having an inclination more pronounced than that of the guides of the said first set, said first and second pluralities of sectors being movable between radially retracted and radially expanded positions and adopting, in the radially expanded position, a conformation identical to the internal conformation of the calibrated material.

4,395,219
APPARATUS FOR FORMING COMPACTIBLE MATERIAL INTO A BODY

Jeffrey J. Franken, Birdsborough; Walter W. Gladney, Kutztown, and William R. Yeich, West Lawn, all of Pa., assignors to Western Electric Co., Inc., New York, N.Y.

Division of Ser. No. 222,424, Jan. 5, 1981, Pat. No. 4,370,294. This application Sep. 27, 1982, Ser. No. 424,689
Int. Cl.³ A01J *21/00*
U.S. Cl. 425—405 R **5 Claims**



1. Apparatus for forming compactible material into a body having a desired size and shape, comprising:

a pouch of a first size, having elastic walls of sufficient strength to at least partially compact the material, such walls being expandable to a second size, larger than the body, said pouch having a necked opening therein at a first end thereof;

a chamber for receiving the pouch, said chamber having inside walls conforming to the desired shape of the body but of the second size, the first end of the pouch being extendable through a necked opening in said chamber and the walls of the first end being sealable to the walls of the opening such that the interior of the pouch is accessible from outside the chamber;

means for forming a sufficient vacuum condition between the pouch and chamber to substantially elastically expand the pouch to the size and shape of the inside walls of the chamber;

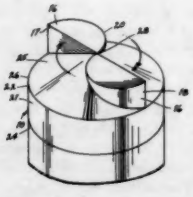
means for introducing the material into the pouch to load the same, said material substantially conforming, as it is introduced, to the shape and second size of the expanded pouch; and

means for introducing air into the chamber to break the vacuum condition thereby permitting the pouch to compress the loaded material and maintain the shape for further compacting into the desired body size and shape.

4,395,220
APPARATUS FOR FORMING CONSTRUCTION BLOCKS

Warren L. Harter, Rte. 3, Box 1038, Newport, Wash. 99156

Filed Jun. 8, 1981, Ser. No. 271,599
Int. Cl.³ B28B *21/92*
U.S. Cl. 425—413 **10 Claims**



1. A rotor for displacing and compacting materials smoothly and evenly while producing a cylindrical hollow core through a formed block, comprising:

a continuous smooth cylindrical outer surface formed about a center axis;

a curved vane projecting axially outward from one end of the cylindrical surface to an outer edge lying within a plane perpendicular to the axis of the smooth cylindrical surface;

said curve vane having a radial edge that intersects said outer edge and is an extension of said cylindrical surface;

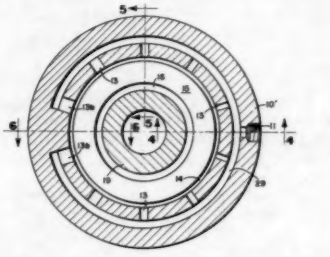
the vane presenting a transversely curved convex face in the intended direction of rotation of the rotor;

the face of the vane having a radial orientation at the center axis of the cylindrical surface and constantly receding from the direction of rotation spirally to a tangential orientation at the cylindrical surface.

4,395,221
TUBULAR EXTRUSION APPARATUS

F. John Herrington, Holcomb, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 109,696, Jan. 4, 1980, Pat. No. 4,285,656. This application Aug. 20, 1981, Ser. No. 294,599
Int. Cl.³ B29F *3/04*
U.S. Cl. 425—467 **12 Claims**



1. A side-fed tubular extrusion die comprising:

a sidewall defining the exterior of said die, an inlet orifice in said sidewall for introducing a molten resin into said die, a first chamber located interiorly of said die in communication with said inlet orifice and extending circumferentially of said die so that the longitudinal extent of said chamber forms a C-shape, said inlet orifice communicating with said C-shaped first chamber at a point intermediate the ends thereof, said C-shaped first chamber receiving a molten resin introduced through said inlet orifice, a second toroidal-shaped chamber located interiorly of said die, an annular interior die wall separating said first and second chambers, a plurality of openings provided in and spaced along said interior die wall, said openings interconnecting said first and second chambers to allow said second chamber to receive a molten resin from said first chamber, and an extrusion gap defined by a mandrel positioned coaxially within said die and an interior die sidewall coaxial with said mandrel, said extrusion gap receiving molten resin from said second toroidal-shaped chamber.

7. A side-fed tubular extrusion die comprising:

a sidewall defining the exterior of said die, an inlet orifice in said sidewall for introducing a molten resin into said die, a first at least partly toroidal-shaped chamber located interiorly of said die in communication with said inlet orifice for receiving a molten resin introduced through said inlet orifice, a second toroidal-shaped chamber located interiorly of said die, an interior die wall separating said first and second chambers, a plurality of openings provided in and spaced along said interior die wall, said openings having respective lengths which progressively decrease

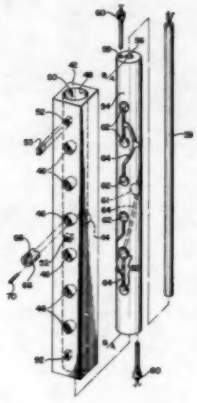
from an opening closest to said inlet orifice to an opening farthest removed therefrom, said openings interconnecting said first and second chambers to allow said second chamber to receive a molten resin from said first chamber, and an extrusion gap defined by a mandrel positioned coaxially within said die and an interior die sidewall coaxial with said mandrel, said extrusion gap receiving molten resin from said second toroidal-shaped chamber.

4,395,222

INJECTION MOLDING APPARATUS

William R. Gaiser, Dayton, Ohio, and John W. Gaiser, Schaumburg, Ill., assignors to The Broadway Companies, Inc., Dayton, Ohio

Filed May 15, 1981, Ser. No. 263,841
Int. Cl.³ B29F *1/00*
U.S. Cl. 425—548 **14 Claims**



1. For use with an injection molding apparatus of the type having an injector portion including a plurality of mold cavities communicating with a source of molten plastic material, a heated manifold comprising:

an elongated shell having an exterior surface defining at least one inlet sprue for communicating with a source of material and a plurality of outlet gates for communicating with mold cavities;

said shell having an interior portion defining a central longitudinal passage therethrough;

heating means positioned within said passage for radiating heat into said interior portion; and

said interior portion having a plurality of discrete spiral runners extending from said inlet sprue to said outlet gates and spiraling about said heating means such that molten plastic material may flow from said inlet sprue through said runners to said outlet gates and receive heat energy from said heating means.

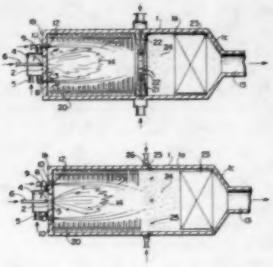
4,395,223

MULTI-STAGE COMBUSTION METHOD FOR INHIBITING FORMATION OF NITROGEN OXIDES

Noboru Okigami; Hiroshi Hayasaka; Yoshitoshi Sekiguchi, and Harushige Tamura, all of Osaka, Japan, assignors to Hitachi Shipbuilding & Engineering Co., Ltd., Osaka, Japan

Division of Ser. No. 914,146, Jun. 9, 1978. This application Dec. 31, 1980, Ser. No. 221,825
Int. Cl.³ F23M *3/04*
U.S. Cl. 431—10 **6 Claims**

1. A multi-stage combustion method for inhibiting the formation of nitrogen oxides comprising injecting a primary fuel and primary air into a furnace to burn the fuel and form a first-stage combustion zone, the air being supplied at a rate in excess of the stoichiometric rate required for the combustion of the fuel, injecting only a secondary fuel in the absence of air into the furnace in the vicinity of the first-stage combustion zone at a rate in excess of the stoichiometric rate required for the consumption of the excess oxygen resulting from the combustion in the first-stage zone to form a second-stage combustion in the vicinity of the first-stage zone, the secondary fuel being supplied at the ratio of secondary fuel supply to total fuel



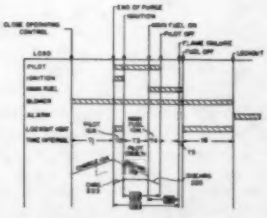
supply of 0.2 to 0.5, the heat produced therein being absorbed by heat absorbing means provided in the wall of the furnace, and supplying secondary air downstream of the second-stage zone, at a rate not less than the stoichiometric rate required for the oxidation of the unburned components resulting from the combustion in the second-stage zone to oxidize the unburned components and form a third-stage combustion zone downstream from the second-stage zone.

4,395,224

BURNER CONTROL SYSTEM

Phillip J. Cade, Winchester, Mass., assignor to Electronics Corporation of America, Cambridge, Mass.

Continuation-in-part of Ser. No. 9,307, Feb. 5, 1979, Pat. No. 4,243,372. This application Sep. 24, 1980, Ser. No. 190,243
Int. Cl.³ F23N *5/00*
U.S. Cl. 431—31 **5 Claims**



1. Burner control apparatus for use with a fuel burner installation having an operating control switch which is actuated to produce an ignition request signal, an air flow switch which provides an air flow signal to indicate the presence of an adequate air flow through the burner, and means responsive to said burner control apparatus for controlling fuel flow, said burner control apparatus comprising:

an electronic timing circuit for providing an ignition cycle having successive timing intervals including in sequence a purge interval, a pilot ignition interval, a pilot stabilization interval and a main fuel ignition interval;

air means for providing an air flow through the burner during said ignition cycle;

lockout means, responsive to a lockout signal applied thereto for a predetermined time, for terminating burner operation and stopping fuel flow to said burner installation;

means, responsive to said operating control switch, for activating said timing circuit, including:

a first photocoupler having a light source connected in parallel with said air flow switch and providing an output signal across its output terminals when said air flow switch is open;

a second photocoupler having a light source connected in series with said air flow switch and providing an output signal across its output terminals when said air flow switch is closed;

means, operative in response to an ignition request signal, for initially applying power to the timing circuit to begin an ignition cycle only if said first photocoupler output signal is present; and

means, operative in response to an ignition request signal, for applying a lockout signal to said lockout means until the occurrence of said second photocoupler output signal;

whereby said timing circuit is disabled to prevent further ignition cycle operation if said air flow switch is closed before said air means is operative and said lockout means is actuated to prevent further ignition cycle operation if said air flow signal is not present within a predetermined time after said air means is operative.

4,395,225

BURNER OPERATED WITH LIQUID FUEL FOR HEATING DEVICES

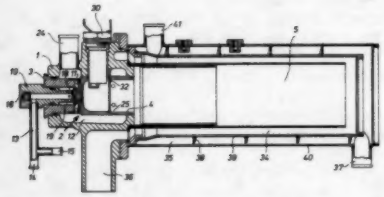
Bernd Mittmann, Munich, Fed. Rep. of Germany, assignor to Webasto-Werk W. Baier GmbH and Co., Munich, Fed. Rep. of Germany

Filed Mar. 6, 1981, Ser. No. 241,369

Claims priority, application Fed. Rep. of Germany, Mar. 15, 1980, 3010078; Jan. 13, 1981, 3100744

Int. Cl.³ F23N *5/00*

U.S. Cl. 431—62 **27 Claims**



1. Burner operated with liquid fuel, for heating devices, especially for vehicle heaters, comprising a low-pressure atomizer arranged at one end of a combustion chamber, said atomizer including a burner insert and a nozzle projecting into an end of the burner insert facing away from the combustion chamber, supply means for feeding a fuel and a primary air stream into said nozzle, and flow control means for automatically controlling at least the quantity of primary air passing through the burner in dependence on the temperature of the burner, further comprising flow control means for automatically controlling the quantity of a second air stream fed to the burner in dependence on the burner temperature.

4,395,226

COMBUSTION SAFETY APPARATUS

Masakatsu Nakanishi, and Toshiyuki Nomura, both of Nagoya, Japan, assignors to Rinnai Kabushiki Kaisha, Nagoya, Japan

Filed Aug. 14, 1980, Ser. No. 178,346

Claims priority, application Japan, Aug. 20, 1979, 54/104995

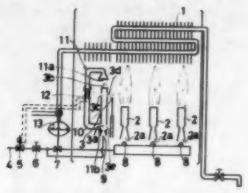
Int. Cl.³ F23N *5/00*

U.S. Cl. 431—76 **3 Claims**

1. A combustion safety apparatus for controlling operation of a burner by monitoring combustion exhaust gas of said burner comprising:

a detecting tube positioned adjacent said burner receiving exhaust gas into an inlet thereof, said burner having gas supply pipe, and an inlet mixing tube, said detecting tube having an outlet in communication with said mixing tube of said burner,

a tubular oxygen concentration cell element having electrodes on its inner and outer surfaces, said cell element



being interposed in said detecting tube, a difference in oxygen concentrations at each of said electrodes producing a certain output when said cell element is heated to a high temperature,

means for heating said cell element to said high temperature, and

safety valve means in said gas supply pipe and connected to said cell element for shutting off gas supply to said burner when said cell element produces less than said certain output.

4,395,227

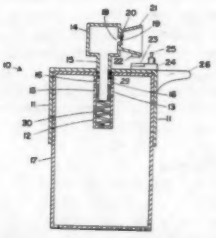
FLAME THROWER ATTACHMENT

Scotlund Stivers, Box 60, Star Route, Bruno, Minn. 55712

Filed Mar. 20, 1981, Ser. No. 245,966

Int. Cl.³ F23Q *2/00*

U.S. Cl. 431—142 **7 Claims**



1. A flame thrower attachment for use with a container of combustible material comprising:

a housing for mounting to and partially encapsulating an aerosol like container of pressurized combustible material;

a nozzle head located on said housing and adapted to connect to an aerosol like container of pressurized combustible material to permit said nozzle head to release a combustible material from an aerosol like container of pressurized combustible material, said nozzle head having an opening for directing a pressurized combustible material along an axis and a diverging section to direct a flame in a first direction;

an ignition means for igniting combustible material as it discharges from an aerosol like container of pressurized combustible material; and

a finger guard attached to said housing, said finger guard having a section extending in the first direction, said finger guard located proximate but off-set from said nozzle head

so that a flame issuing from said nozzle head will pass over said finger guard without burning the user's fingers.

4,395,228

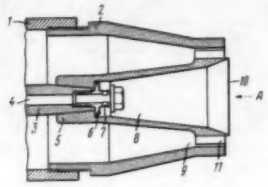
ROTARY BURNER FOR LIQUID FUELS

Vladimir G. Bazarov, ulitsa Matveevskaya, 42, korpus 5, kv. 135; Alexei V. Kuzmin, prospekt Vernadskogo, 89, korpus 2, kv. 64; Gennady A. Smaga, ulitsa Akademicheskaya, 71, kv. 79; Zelik F. Kapchits, Oktyabrskaya ulitsa, 69, kv. 51; Sergei J. Dennikov, ulitsa Veshnyakovskaya, 26, kv. 334, all of Moscow, and Peter I. Soosalu, Pyizmyae TEE, 113, kv. 14, Tallin, all of U.S.S.R.

Filed Feb. 6, 1981, Ser. No. 232,113

Int. Cl.³ F23D *11/04*

U.S. Cl. 431—168 4 Claims



1. A rotary burner for viscous liquid fuels, comprising a casing; a nozzle mounted on said casing for axial movement; a fuel atomizer rotatably mounted in said nozzle made in the form of a cup which together with an output portion of the nozzle defines an annular convergent channel connected to an air supply means; a circular row of vanes shaped as wedges whose bases face the cup edge, and mounted on an external surface of the cup near to an edge of said cup.

4,395,229

DISCHARGE TYPE IGNITOR FOR OIL STOVE

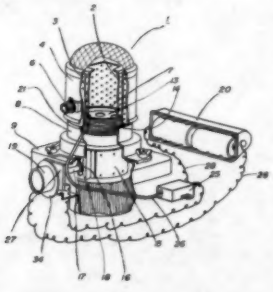
Shuji Yasuhira, Tondabayashi, and Shinichi Naka, Yao, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Mar. 25, 1981, Ser. No. 247,250

Claims priority, application Japan, Jul. 22, 1980, 55-104103[U]

Int. Cl.³ F23Q *3/00*

U.S. Cl. 431—261 9 Claims



1. An ignitor assembly for oil stoves comprising:

an electric power supply;

an ignitor plug held in alignment with an exposed portion of a wick for firing the wick through the utilization of discharge originated from the electric power supply to the ignitor plug; and

a flame sensor disposed at a predetermined distance from the ignitor plug and in alignment with the exposed portion of the wick, said flame sensor element terminating the supply of electric power to said ignitor plug after combustion of said wick and reestablishing the supply of electric power to the ignitor plug if said wick is inadvertently extinguished while being in a predetermined operative position.

4,395,230

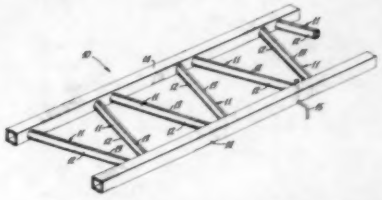
IGNITION CARRY-OVER IN MULTIPLE BURNER HEATING APPARATUS

Max A. Berry, Covina, Calif., assignor to Abdul R. Ghafoori, Monterey Park, Calif.

Filed Oct. 24, 1980, Ser. No. 200,416

Int. Cl.³ F23D *13/36*

U.S. Cl. 431—286 3 Claims



1. In a heating apparatus of the type including a multiplicity of spaced, separate burners, each burner including an elongate length of pipe along which a flame extends, and at least one manifold connected to said burners for conducting air and gas thereto, the improvement wherein said burners are arranged in a zig-zag pattern with the first end of each burner spaced relatively closely to the first end of the adjacent burner on one side thereof and spaced relatively far from the first end of the adjacent burner on the other side thereof.

4,395,231

METHODS OF AND APPARATUS FOR SINTERING TUBULAR CERAMIC ARTICLES

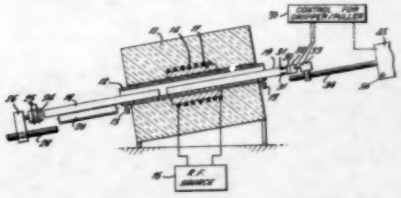
Gilbert Sands, Northwich, and Ian H. Jennens, Chester, both of England, assignors to Chloride Silent Power Limited, London, England

Filed Oct. 30, 1981, Ser. No. 316,715

Claims priority, application United Kingdom, Nov. 6, 1980, 8035728

Int. Cl.³ F27D *3/00*

U.S. Cl. 432—11 13 Claims

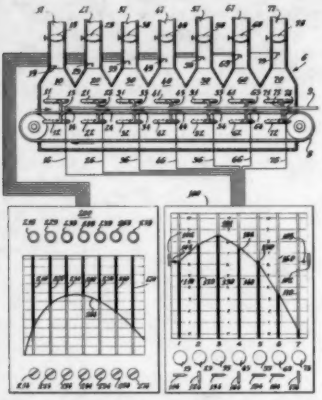


1. A method of moving ceramic tubes into and through a pass-through sintering furnace comprising pushing a succession of the tubes into the furnace at a uniform speed and, at the exit end of the furnace, gripping each tube as it leaves the furnace and pulling the tube forwardly at a uniform speed which is less than the speed at which the tubes are fed into the furnace but sufficient to hold the pulled tube clear of the next following tube.

4,395,232
OVEN CONTROL APPARATUS

Albert P. Koch, Kinnelon, N.J., assignor to Nabisco Brands, Inc., Parsippany, N.J.

Filed Dec. 7, 1981, Ser. No. 327,846
Int. Cl.³ F27D 21/00, 19/00
U.S. Cl. 432—32 18 Claims



1. An apparatus for displaying the rate of heat input to a zone of an oven of the type comprising burner means, gas supply means comprising a supply conduit for transporting combustible gas between a pressurized source and the burner means, and valve means operable to vary the flow of combustible gas through the supply conduit, wherein the apparatus comprises:

(a) a manometer in communication with the supply conduit, having two upwardly-directed legs and containing sufficient fluid to at least partially fill each leg throughout the intended operating range, wherein one of said legs is a display leg and the cross-sectional areas of both legs are proportioned effectively to cause the level of fluid in the display leg to move in direct proportion to the rate of flow of combustible gas to the burner means;

(b) an adjustable scale juxtaposed with the display leg and linearly calibrated to indicate the rate of heat input to the zone of the oven for a given rate of flow of combustible gas indicated by the level of fluid in the display leg; and

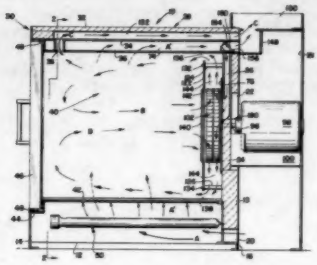
(c) means for adjusting said adjustable scale to correct for the heating value of the combustible gas, comprising a calibration scale having markings indicating a range of heating values for various combustible gases, a set point indicator, and means for aligning the set point indicator with a marking on the calibration scale corresponding to the heating value of the combustible gas in use.

4,395,233
DUAL FLOW HEATING APPARATUS

Robert C. Smith, Vergennes, and A. Benns Cox, II, North Ferrisburg, both of Vt., assignors to G. S. Blodgett Co., Inc., Burlington, Vt.

Filed Jun. 22, 1981, Ser. No. 276,182
Int. Cl.³ F27B 3/22; A21B 1/00; F24C 15/32
U.S. Cl. 432—176 37 Claims

1. In a forced air heating apparatus having a heating compartment and an associated air conduit means connected thereto; the improvement comprising heater means disposed within said conduit means for heating an intake ambient air stream drawn into said conduit means at a first location, said conduit means enabling transport of a heated air stream from said heater means into said heating compartment at a second location, an air fan means located in said heating compartment and having a first means operable to forcibly draw said heated air stream into contacting therewith at its entry into said heating compartment and having a second means operable to establish a recirculated forced air flow internally within said heating compartment without entry of said internal forced air flow into said air conduit, said first and second air fan means enabling

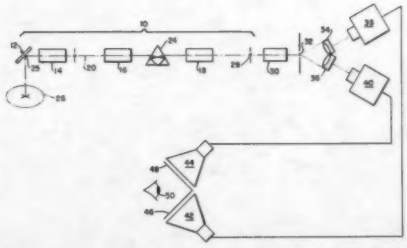


mixing of said heated air stream with said internal forced air flow, and vent means formed in said heating compartment to enable the outflow of heated air from said heating compartment.

4,395,234
OPTICAL SCANNING PROBE WITH MULTIPLE OUTPUTS

Martin Shenker, Pomona, N.Y., assignor to Farrand Optical Co., Inc., Valhalla, N.Y.

Filed Sep. 16, 1977, Ser. No. 833,842
Int. Cl.³ G09B 9/08
U.S. Cl. 434—33 5 Claims

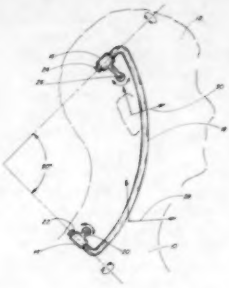


1. A multiple output scanning probe having an entrance pupil, an exit pupil and an optical axis, the optical elements between said pupils comprising a relatively distortion-free telesope of approximately one power, said telescope including an image collimating element, wherein a collimated output at the exit pupil is divided into a plurality of images by a plurality of imaging systems, each of said imaging systems received a portion of the output field to provide a true angular image of said portion of the output field.

4,395,235
FOUR PIVOT LINKAGE TO SIMULATE HEAD/NECK KINEMATICS

Edward B. Becker, Riverhead, N.Y., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 2, 1982, Ser. No. 344,916
Int. Cl.³ G09B *23/32*
U.S. Cl. 434—270 **2 Claims**

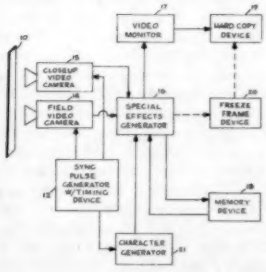


1. An apparatus for simulating head/neck kinematics comprising:
- a roll-pitch link having means for pivotable attachment to the torso of an anthropomorphic dummy;
- a yaw-pitch link having means for pivotable attachment to the head of said anthropomorphic dummy; and;
- a neck link having an arcuate form, the upper end of said neck link being pivotally connected to said yaw-pitch link and the lower end of said neck link being pivotally connected to said roll-pitch link such than when said apparatus is attached to said anthropomorphic dummy a four pivot linkage is formed between the torso and the head.

4,395,236
METHOD OF GENERATING PROCESS INSTRUCTIONS

John P. Gotthold, 1258 Mandarin Dr., Sunnyvale, Calif. 94087

Filed Oct. 2, 1981, Ser. No. 307,726
Int. Cl.³ G09B *19/00*
U.S. Cl. 434—219 **3 Claims**

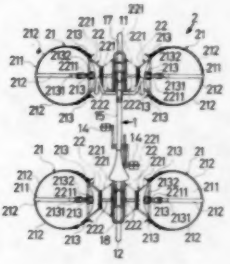


1. The method of generating a set of instructions for conducting a process, comprising the steps of:
conducting the process to show the various steps of the process in sequential order;
imaging each step of the process with a video camera to generate a video signal;
supplying the video signal to a video monitor to allow study of the image for correction and alteration;
generating a hard copy of the image by supplying the video signal to a hard copy device capable of receiving a video signal and generating a hard copy photograph-like record on a paper-like medium;
recording the video signal on a video signal recorder for future use in generating subsequent hard copies; and
assembling the hard copies in proper sequence to form a set of instructions showing the process.

4,395,237
AMPHIBIOUS BICYCLE

Yaichi Watanabe, 5-11 Kitakasugaoka, 4-Chome, Ibaraki-Shi, Osaka-Fu, Japan

Continuation of Ser. No. 971,885, Dec. 21, 1978, abandoned. This application Mar. 6, 1981, Ser. No. 241,204
Claims priority, application Japan, Dec. 24, 1977, 52-156205
Int. Cl.³ B60F *3/00*
U.S. Cl. 440—27 **7 Claims**



1. An amphibious vehicle comprising a bicycle having a body and ground engaging front and rear wheels for running on land, front wheel shaft means and rear wheel shaft means respectively on said body, each of said shaft means having opposite end portions projecting transversely outwardly of the body, a float mounting frame freely rotatably mounted on each end of each shaft means, and floats detachably securable one to each float mounting frame, each float being an inflatable air-tight bag capable of being inflated into a ball-like shape, each of said float mounting frames comprising a cage within which part of the inflated float may be disposed, and with each of said float mounting frames including a flanged sleeve which surrounds the associated shaft means with said cage connected with said flanged sleeve, and means for mounting each cage on the respective flanged sleeve with the direction of each of the cages reversed so that each cage may be accommodated inwardly of the end of the associated shaft means.

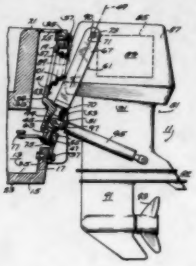
4,395,238
OUTBOARD MOTOR MOUNTING MEANS AFFORDING UPWARD TILTING WITHOUT TRAVEL OF THE MOTOR FORWARDLY OF THE BOAT TRANSOM

Guy D. Payne, Lake Villa, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Feb. 20, 1981, Ser. No. 236,319
Int. Cl.³ B63H *21/26*
U.S. Cl. 440—53 **23 Claims**

1. A marine propulsion device comprising a bracket adapted to be fixed to the transom of a boat and including a mounting surface engaged with the boat transom when said bracket is boat mounted, said bracket also including a lower part having a lower bearing with a fixed steering axis which extends generally vertically when said bracket is boat mounted, a member including a lower portion extending in said lower bearing, and a pair of laterally spaced arms connected to said lower portion and respectively including upper horizontal bearings having a common axis located in spaced relation above said lower bearing, a steering arm fixed to said member for steerably rotating

said member within said lower bearing about said generally vertical axis, a propulsion unit including a powerhead and a lower unit extending fixedly downwardly from said powerhead and including a rotatably mounted propeller, and means on said powerhead adjacent the top thereof and cooperating with said horizontal bearings for pivotally connecting said



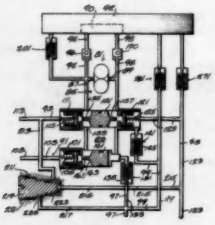
propulsion unit to said member for movement about the horizontal axis between a running position with said propeller submerged in water and with said propulsion unit located wholly aft of said bracket mounting surface and an elevated position with said propeller substantially out of the water and with said propulsion unit located wholly aft of said bracket mounting surface.

4,395,239

HYDRAULIC SYSTEM FOR MARINE PROPULSION DEVICE WITH SEQUENTIALLY OPERATING TILT AND TRIM MEANS

Charles B. Hall, Ingleside; Edward D. McBride, Waukegan, both of Ill., and Robert F. Young, Kenosha, Wis., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Apr. 10, 1981, Ser. No. 252,813
Int. Cl.³ B63H 5/12
U.S. Cl. 440—61 **14 Claims**



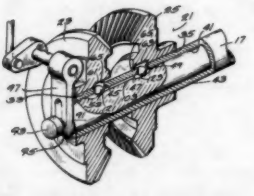
14. A marine propulsion device comprising transom bracket means adapted to be connected to a boat transom, a stern bracket, first pivot means connecting said stern bracket to said transom bracket means for pivotal movement therebetween about a first pivot axis which is horizontal when said transom bracket means is boat mounted, a swivel bracket, second pivot means connecting said swivel bracket to said stern bracket for pivotal movement with said stern bracket and relative to said stern bracket about a second pivot axis parallel to said first pivot axis, a propulsion unit including, at the lower end thereof, a rotatably mounted propulsion element, means pivotally connecting said propulsion unit to said swivel bracket for steering movement relative to said swivel bracket and for common pivotal movement with said swivel bracket, a trim cylinder-piston assembly pivotally connected to said stern bracket and to said swivel bracket, a tilt cylinder-piston assembly pivotally connected to said transom bracket means and to said stern bracket, a reversible pump including first and second ports, first conduit means communicating between said first pump port and one end of said trim cylinder-piston assembly, second conduit means communicating between said first pump port and one end of said tilt cylinder-piston assembly, third conduit means including first valve means dividing said third conduit means into an upstream portion communicating with said second pump port and a downstream portion communicating with the other end of said trim cylinder-piston assembly, second conduit means including second valve means dividing said fourth conduit means into an upstream portion communicating with said second pump port and a downstream portion communicating with the other end of said tilt cylinder-piston assembly, and third conduit means including third valve means communicating between said downstream portion of said third conduit means and said downstream portion of said fourth conduit means, said third valve means being operable to prevent fluid flow from said downstream portion of said third conduit means to said downstream portion of said fourth conduit means, and to permit fluid flow from said downstream portion of said fourth conduit means to said downstream portion of said third conduit means in response to the presence of fluid under pressure above a predetermined level in said downstream portion of said fourth conduit means.

4,395,240

MARINE PROPULSION LOWER UNIT WITH BALL CLUTCH MECHANISM

Clarence E. Blanchard, Kenosha, Wis., assignor to Ourboard Marine Corporation, Waukegan, Ill.

Filed Jan. 5, 1981, Ser. No. 222,589
Int. Cl.³ B63H 23/08
U.S. Cl. 440—86 **14 Claims**



1. A marine propulsion device comprising a lower unit including a propeller shaft supported in said lower unit against axial movement and for rotary movement relative to said lower unit and including an axial bore extending from one end of said shaft, said axial bore defining an annular wall including first and second axially spaced series of circumferentially spaced cylindrical apertures communicating with said bore and having radially extending axes, a propulsion element fixed on said propeller shaft for common rotation therewith, respective balls in each of said apertures, first and second axially spaced facing bevel gears mounted in said lower unit co-axially with said propeller shaft for rotation relative to said lower unit and said propeller shaft and against axial movement relative to said lower unit and said propeller shaft, said first and second bevel gears including respective axial bores having therein respective first and second series of circumferentially spaced sockets opening radially inwardly and located in axial alignment with said first and second series of apertures in said propeller shaft, and an actuator extending in said axial bore in said propeller shaft and movable between axially spaced forward drive, neutral, and reverse drive positions, said actuator including means for selectively engaging said balls with said bevel gears to selectively establish said device in forward drive, neutral, and reverse drive conditions, said means comprising a series of circumferentially spaced, axially extending grooves in said actuator, each of said grooves including a raised central portion having first and second ends axially spaced at a distance less that the axial spacing of said first and

second series of apertures and having, intermediate said ends, a concave cross sectional contour with a part thereof having a common radius equal to that of said balls such that engagement of said part with an associated one of said balls forces the associated ball radially outwardly relative to the associated aperture in said propeller shaft, and into engagement with an associated socket in one of said bevel gears, each of said grooves further including first and second end portions extending respectively from said first and second ends of said central portion, each of said end portions having a cross sectional contour of such dimension as to permit receipt thereinto of an associated ball so as to permit withdrawal of the associated ball from an associated socket, said end portions of said grooves having respective axial extents such that, when said actuator is in said forward drive position, said first series of apertures is axially aligned with said central portions of said grooves and said second series of apertures is axially aligned with said second end portions of said grooves, whereby rotary drive is established between said first bevel gear and said propeller shaft and rotary drive is disengaged between said second bevel gear and said propeller shaft, such that, when said actuator is in said neutral position, said first and second series of apertures are respectively axially aligned with said first and second end portions of said grooves and said central portions of said grooves are located intermediate said first and second series of apertures, whereby both of said bevel gears are disengaged from rotary drive with said propeller shaft, and such that, when said actuator is in said reverse drive position, said second series of apertures is axially aligned with said central portions of said grooves and said first series of apertures is axially aligned with said first end portions of said grooves, whereby rotary drive is established between said second bevel gear and said propeller shaft and rotary drive is disengaged between said first bevel gear and said propeller shaft.

4,395,241

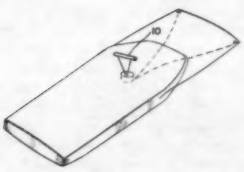
AMPHIBIOUS SLED DEVICE

John E. Comparetto, 108 Cropper St., Chincoteague, Va. 23336

Continuation of Ser. No. 18,207, Mar. 7, 1979, abandoned. This application Nov. 3, 1981, Ser. No. 317,820

Int. Cl.³ A63C *15/00*

U.S. Cl. 441—65 **9 Claims**



1. A sled for use over ice, snow, and water, said sled comprising:

a semi-rigid buoyant member adapted to support a user;

a flexible member attached to said buoyant member and extending beyond one end thereof;

a centrally located opening;

a cord having two ends, each end being attached to said flexible member substantially at a corner thereof,

said cord passing through said opening and enabling said user to form a venturi-like passage with said flexible member.

4,395,242

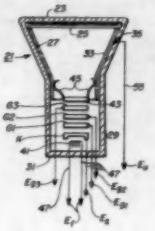
METHOD OF ELECTRICALLY PROCESSING A CRT MOUNT ASSEMBLY TO REDUCE AFTERGLOW

Paul R. Liller, and Donald J. Shahan, both of Lancaster, Pa., assignors to RCA Corporation, New York, N.Y.

Filed Aug. 19, 1981, Ser. No. 294,132

Int. Cl.³ H01J *9/20*

U.S. Cl. 445—5 **6 Claims**



1. In a method of electrically processing a completed CRT having an electron gun including a focus electrode and a high-voltage electrode, said high-voltage electrode being closely spaced from said focus electrode, the steps comprising

(a) heating the portion of said focus electrode that faces said high-voltage electrode at temperatures above about 700° C., (b) and then RF spot-knocking said portions of said focus electrode.

4,395,243

METHOD OF FABRICATING CATHODE-RAY TUBE

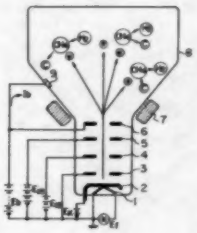
Noboru Toyama, and Yoshinori Oyamada, both of Mobara, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 8, 1981, Ser. No. 261,757

Claims priority, application Japan, May 16, 1980, 55-64127

Int. Cl.³ H01J *9/44*

U.S. Cl. 445—6 **6 Claims**



1. A method of fabricating a cathode-ray tube, comprising the sequential steps of:

(a) preparing an evacuated and sealed bulb with a funnel portion thereof having a phosphor screen formed thereon and a neck portion thereof having an electron gun mounted therein including a decomposed and activated oxide cathode and an assembly of grids, a getter being attached to a predetermined portion of the interior of said bulb;

(b) flashing said getter to deposit a film of getter material on the inner surface of said bulb, so that a large part of gas molecules remaining in said bulb are absorbed by said getter material film;

(c) causing said cathode to emit an electron beam while deflecting said electron beam by means of deflecting means arranged around said bulb to scan a region between said cathode and said phosphor screen with said electron

beam, so that gas molecules still remaining in said bulb are decomposed by said electron beam; and

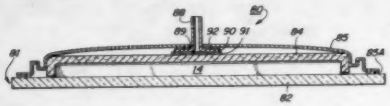
(d) heating said cathode to emit a predetermined electron current therefrom for aging thereof.

4,395,244

METHOD OF MAKING A DISPLAY PANEL

David Glaser, 1112 NE. 23rd Dr., Wilton Manors, Fla. 33305

Division of Ser. No. 51,152, Jun. 22, 1979, Pat. No. 4,303,847.
This application Apr. 13, 1981, Ser. No. 253,993
Int. Cl.³ H01J *9/36, 9/385*
U.S. Cl. 445—25 **7 Claims**



1. A method of manufacturing a display panel, comprising the steps of

positioning an electrode structure against one face of a rigid, glass pane having a window area,

positioning a substantially impervious, flexible sheet over said electrode structure,

sealing said sheet to said pane along a continuous area surrounding said electrode structure, and

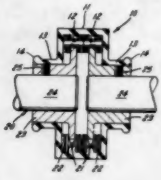
reducing the pressure in the space between said sheet and said pane in which said electrode structure is located below the pressure on the external side of said sheet to press said electrode structure against said pane.

4,395,245

CHAIN COUPLING ELASTOMER COVER

Dennis L. Carlson, Waukesha, Wis., assignor to Rexnord Inc., Milwaukee, Wis.

Filed May 5, 1980, Ser. No. 146,557
Int. Cl.³ F16D *3/54, 3/84*
U.S. Cl. 464—49 **9 Claims**



1. A semi-rigid elastomeric cover for a roller chain coupling of the type including two sprockets connected to two associated hubs for mounting on substantially aligned shafts, said sprockets having a diameter substantially greater than said hubs and being connected by a double strand of roller chain for transmitting torque from one shaft to the other; said cover comprising:

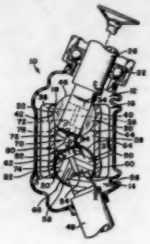
a one-piece elastomeric member having a generally cylindrical center portion, a contour on the radial interior surface of said center portion configured to tightly fit the double strand of roller chain of said coupling, and two opposed axially extending, outwardly directed flanges connected to said center portion, said center portion having an interior diameter that is substantially greater than the interior diameter of said flanges.

4,395,246

UNIVERSAL JOINT

Alistair G. Taig, and David D. Jordan, both of South Bend, Ind., assignors to The Bendix Corporation, Southfield, Mich.

Filed Sep. 5, 1980, Ser. No. 184,491
Int. Cl.³ F16D *3/20*
U.S. Cl. 464—153 **5 Claims**



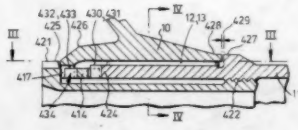
1. In a universal joint, a housing having a pair of openings for receiving an input assembly with an input shaft and an output assembly with an output shaft, said input assembly being rotatable to impart rotation to said housing and to said output assembly, a pilot assembly disposed within said housing and cooperating with said input and output assemblies to substantially maintain equal angles between said assemblies and said housing, characterized by said input and output assemblies terminating in cylindrical ends having their longitudinal axis extending substantially normal to said input and output shafts, and said housing defining a first pair of arcuate surfaces engageable with said input cylindrical end and a second pair of arcuate surfaces engageable with said output cylindrical end, said housing rotating with said input and output assemblies to provide for sliding engagement between said cylindrical ends and their respective housing arcuate surfaces when said input assembly is imparting rotation to said housing and said output assembly, and said cylindrical ends remain in spaced relation so that the rotation of said input cylindrical end is transmitted to said output cylindrical end via said housing.

4,395,247

SHAFT COUPLING

Derek A. Roberts, Bristol, England, assignors to Rolls-Royce Limited, London, England

Filed Jul. 21, 1980, Ser. No. 170,924
Claims priority, application United Kingdom, Aug. 31, 1979, 7930366
Int. Cl.³ F16D *3/18*
U.S. Cl. 464—158 **12 Claims**



1. A coupling comprising relatively inner and outer members having a common axis, the members being provided with intermeshing splines that have one or more pairs of circumferentially confronting first surfaces, each of the members additionally provided with one or more circumferentially confronting second surfaces spaced from the said first surfaces and extending at an angle relative to the first surfaces, an axially facing abutment distinct from both the first and second surfaces provided on a first of the members, the abutment being positioned relative to the second member so that the second member can abut against it, displaceable means for allowing

relative radial displacement between the first and second surfaces of at least one of the inner or outer members, and urging means for urging the first member along the common axis relative to the second member, the urging means being operable to move the first member to an initial position where the first and second surfaces are urged into contact with each other and opposing circumferential forces are imposed on the first and second members and being operable to move the first member to a final position where the first member abuts the abutment.

4,395,248

MULTI-SPEED TRANSMISSION

John M. Kern, Ithaca, N.Y., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Oct. 20, 1980, Ser. No. 198,506
Int. Cl.³ F16H *55/56, 55/30, 11/04*
U.S. Cl. 474—24 **7 Claims**

1. A multi-speed drive system comprising:
a multiple part drive means;
a multiple part driven means;
means connecting said drive and driven means;
one part of both said drive and driven means having external teeth;
a second part of both said drive and driven means comprising a pair of axially movable members each having internal teeth meshing with said first-named external teeth;
means for moving one of said pairs of axially movable members to change the speed ratio between said drive and driven means;
said connecting means being a chain;
the radially outermost part of said drive means having external teeth with which said chain meshes in one speed ratio; and
the radially outermost part of said driven means having external teeth with which said chain meshes in another and different speed ratio.

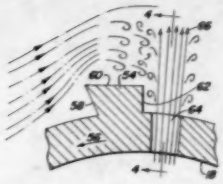
4,395,249

VARIABLE SPEED DRIVE CLUTCH

Keni K. Prasad, and Eugene G. Hayes, both of Beaver Dam, Wis., assignors to Deere & Company, Moline, Ill.

Filed Dec. 22, 1980, Ser. No. 218,854
Int. Cl.³ F16H *55/52*
U.S. Cl. 474—93 **7 Claims**

1. In a V-belt drive having a rotating pulley and an annular flange closely adjacent the pulley periphery formed about the pulley axis and extending axially from a side of the pulley; a plurality of vanes extending radially from the radial outer surface of the flange; said flange having means including air passages extending through the flange for directing air outwardly and toward the center plane of the pulley, said passages



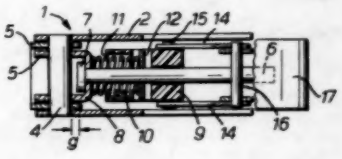
being close to but in trailing relation with respect to respective vanes extending from the flange.

4,395,250

TENSIONING DEVICES

Alan G. King, Bedfordshire, England, assignor to Borg-Warner Limited, Letchworth, England

Filed Jan. 30, 1981, Ser. No. 230,028
Claims priority, application United Kingdom, Sep. 29, 1980, 8031352
Int. Cl.³ F16H *7/08*
U.S. Cl. 474—111 **9 Claims**



1. A tensioning device for an endless driving element, comprising a pivoted arm, a rod, an actuator slidably mounted on said rod, compression spring means mounted about said rod and biasing said actuator in one axial direction along said rod, link means coupled between said actuator and said pivoted arm by which to convert axial movement of said actuator into pivotal movement of said arm, and vice versa, said arm being caused to pivot in a tensioning sense in response to spring biased movement of said actuator in said one direction, a catch disc mounted on said rod and tiltable into binding engagement therewith in response to return movement of said arm, by which to inhibit said return movement of said actuator and hence said return pivotal movement of said arm, and a shoe adapted to directly engage the endless driving element and connected to said pivoted arm.

4,395,251

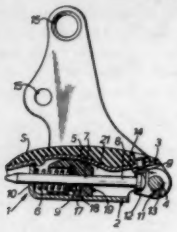
TENSIONING DEVICES

Alan G. King, Biggleswade, and Keith Hunt, Meppershall, both of England, assignors to Borg-Warner Limited, Letchworth, England

Filed Jan. 30, 1981, Ser. No. 229,969
Claims priority, application United Kingdom, Feb. 11, 1980, 8004449
Int. Cl.³ G05G *5/06;* **F16H** *7/08*
U.S. Cl. 474—111 **12 Claims**

1. A tensioning device for an endless driving element, comprising a rod, a pivotal arm, an actuator slidably mounted on said rod, compression spring means biasing said actuator in one direction along said rod, said arm being caused to pivot in a tensioning sense in response to spring biased movement of said actuator in said one direction, a catch disc mounted on said rod and tiltable into binding engagement therewith in response to return movement of said actuator against said spring bias along

said rod, as would be caused upon return pivotal movement of said arm, by which to inhibit said return movement of said



actuator and hence said return pivotal movement of said arm, and means carried by said pivoted arm to engage said endless driving element.

4,395,252

APPARATUS FOR MAKING BAGS OF THIN SYNTHETIC-RESIN FILM

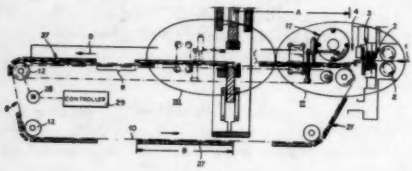
Hans Lehmacher, Im Hummerich, 5216 Niederkassel-Mondorf, Fed. Rep. of Germany

Filed May 20, 1981, Ser. No. 265,547

Claims priority, application Fed. Rep. of Germany, May 24, 1980, 302009

Int. Cl.³ B31B *23/02, 23/14*

U.S. Cl. 493—28 **6 Claims**



1. An apparatus for making bags from an elongated synthetic-resin tube, said apparatus comprising:

an endless conveyor having a stretch defining a transport path extending in a transport direction from an upstream cutting/welding station through a stacking station and a flattening station, to a downstream punching station, said conveyor having an endless support element and a plurality of groups of transverse rigid bars forming along said path a plurality of respective platforms having predetermined lengths in said direction and spaced apart by gaps, the bars of each platform engaging one another in said direction;

means for feeding said tube generally continuously in said direction to said upstream cutting/welding station;

cutting/welding means in said cutting/welding station for periodically transversely cutting through said tube and generally simultaneously forming upstream of each cut a transversely throughgoing weld for subdividing said tube into a succession of bag blanks;

stacking means in said stacking station including a transversely reciprocal needle bar provided with a plurality of needles including at least one blocking needle, and a transversely reciprocal stripper bar through which said needles engage;

control means for synchronously operating said conveyor, cutting/welding means, and stacking means for piercing said needles through the upstream edge of each of said bag blanks as same is cut free from said tube while supporting each said bag blanks as same are cut free from said tube on a one of said platforms and for, after a predetermined number of operations of said cutting/welding means, stripping said bag blanks off said needles with said stripper bar and operating said conveyor to displace the stack of bag blanks stripped from said needles downstream to said punching station;

flattening means in said flattening station having a plurality of flattening elements for engaging each of said bag blanks as same is cut free from said tube and pressing same flatly down against the platform supporting it;

a gripper carriage displaceable in and against said direction and having a holding element displaceable vertically toward and away from said stretch, said control means being connected to said carriage to press said holding element down against said stack of bags blanks as same are stripped from said needle bar and for thereafter displacing said carriage synchronously and codirectionally with the platform supporting said stack downstream to said punching station;

punching means at said punching station for punching said stacks of bag blanks as same arrive, said punching station being spaced in said direction downstream of said welding/cutting station by a distance substantially greater than said predetermined length of said; and

a deflecting plate at said stacking station, said control means being connected to said plate for pivoting said plate by and deflecting a new tube end over a stack when same is engaged by said gripper element.

4,395,253

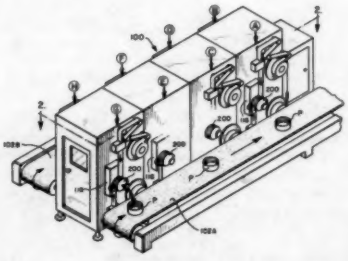
METHOD OF MAKING CORRUGATED PACKAGES

James A. Goodman, Glencoe, Ill., assignor to Consolidated Foods Corporation, Deerfield, Ill.

Division of Ser. No. 974,065, Dec. 28, 1978, Pat. No. 4,250,797. This application Oct. 15, 1980, Ser. No. 197,363

Int. Cl.³ B31C *1/06;* **B31F** *1/20*

U.S. Cl. 493—87 **21 Claims**



1. The method of forming a corrugated package comprising the steps of:

corrugating a first sheet of material having a selected width into fluted corrugations and maintaining the shape of said corrugations by vacuum while forming said sheet into a shape defining a portion of the sidewall of a package;

positioning a bottom wall member having an outer edge adjacent said first sheet so that said outer edge is aligned with said fluted corrugations;

wrapping a second sheet of uncorrugated material having a width greater than the width of said first sheet adjacent said fluted corrugations of said first sheet so that a portion of said second sheet projects over the outer edge of said bottom wall member; and

simultaneously joining said sheet to the fluted corrugations of said first sheet and to said bottom wall member so that said second sheet forms an outer ply of the side wall of said package and joins said bottom wall to said side wall, whereby said corrugated side wall and said package are formed substantially simultaneously.

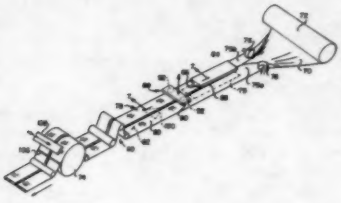
4,395,254
APPARATUS FOR MAKING DISPOSABLE, BREATHABLE RECEPTACLES

Samuel J. Schuster, 617 Vallombrosa, Pasadena, Calif. 91107

Continuation-in-part of Ser. No. 55,159, Jul. 6, 1979, abandoned, which is a division of Ser. No. 955,221, Oct. 27, 1978, abandoned. This application Oct. 14, 1980, Ser. No. 196,195

Int. Cl.³ B31B *1/64*

U.S. Cl. 493—196 **10 Claims**



1. In an apparatus for making breathable receptacles from continuous, laminated web material drawn from web supply means, the web material comprising a layer of paper, or the like, impermeable to microorganisms but highly permeable to sterilizing vapor and a layer of thermoplastic, polymeric material, the combination including:

means for advancing the web material;

means for superimposing areas of said web material with the polymeric layers of said areas in confronting relation;

a heat sealer, having individual heat seal elements, positioned adjacent the advancing web material and operable to bond together the polymeric layers with a plurality of small heat seals; and

means disposed between the confronting polymeric layers for separating the portions of the polymeric layers bonded together by the heat sealer as the web material advances to cause localized delamination of the paper and polymeric layers and rupturing of the polymeric layers at the positions of the small heat seals.

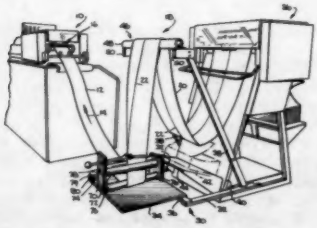
4,395,255
WEB FOLDING APPARATUS

George N. Branecky, Bethel; Frank T. Roetter, Westport, and Frank A. Oeschger, East Norwalk, all of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Continuation-in-part of Ser. No. 188,174, Sep. 17, 1980, Pat. No. 4,378,223. This application Oct. 15, 1981, Ser. No. 311,719

Int. Cl.³ B65H *45/22*

U.S. Cl. 493—439 **8 Claims**



1. For use in combination with a machine for feeding a web of paper in a downstream path of travel, apparatus for folding an unfolded web of paper along a longitudinally-extending weakened fold line thereof, said apparatus comprising:

(a) a frame;

(b) web drag means including an elongated drag member fixedly attached to the frame and horizontally extending across the path of travel of an unfolded web for frictional engagement thereby;

(c) an elongate lower roller rotatably attached to the frame below the level of the drag member and extending transverse to the drag member such that the axis of the lower roller extends downwardly and at an angle of 95° plus or minus one degree with respect to a vertical plane extending through the drag member such that an unfolded web may extend downwardly in the path of travel from said drag member to and into engagement with said lower roller and be guided thereby so as to be gradually folded between said drag member and lower roller;

(d) an output roller, said output roller rotatably attached to the frame below the level of the drag member and extending transverse to said drag member such that said folded web may extend in the path of travel from beneath said lower roller to said output roller and into engagement therewith and such that said folded web may extend upwardly in the path of travel from beneath said output roller to said machine; and

(e) web guide means including a pair of drag elements spaced apart from each other and connected to the frame and extending into engagement with the web between the drag member and lower roller such that said elements respectively engage the gradually folding web on opposite sides of the fold line for pre-creasing the web along the fold line as said machine feeds the web in said downstream path of travel.

4,395,256
CENTRIFUGE ROTOR CLOSURE

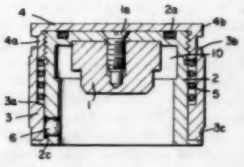
Gerhard Schröter, Osterode, Fed. Rep. of Germany, assignor to Heraeus-Christ GmbH, Osterode, Fed. Rep. of Germany

Filed Dec. 2, 1981, Ser. No. 326,503

Claims priority, application Fed. Rep. of Germany, Dec. 13, 1980, 3047118

Int. Cl.³ B04B *1/00*

U.S. Cl. 494—38 **11 Claims**



1. Centrifuge rotor closing structure having

a rotor stub (15);

axially extending ducts (11, 12) passing through said rotor stub (15) and terminating at an end portion thereof;

and a cover cap closing off the end portion of said stub and inhibiting communication between the ends of said axially extending ducts and the ambient surrounding thereof,

said closure comprising, in accordance with the invention, the combination of

a plug element (1);

means (8, 9) sealingly fitting said plug element against the end portion of the stub (15);

a cover cap fitted over the plug element (1), said cover cap having a depending portion externally surrounding the stub (15);

radially movable rolling engagement elements (6) located in said depending portion of the plug;

an axially movable outer sleeve (3) surrounding said depending portion and, selectively, positioning said rolling elements in engagement with the stub (15) when moved to extend over the rolling elements, and releasing said rolling

elements from engagement with the stub (15) when moved axially out of engagement with the rolling elements.

4,395,257

SEPARATING VESSEL AND A SEPARATING CENTRIFUGE FOR USE IN THE CENTRIFUGAL SEPARATION OF A LIQUID

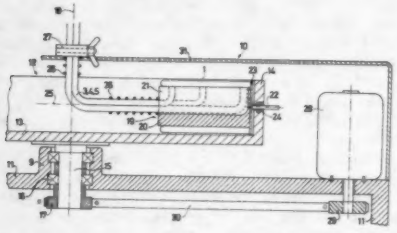
Paul Manella, Dübendorf, Switzerland, assignor to Doltron AG, Uster, Switzerland

Filed May 28, 1981, Ser. No. 267,715

Claims priority, application Switzerland, Jun. 10, 1980, 4450/80

Int. Cl.³ B04B 5/00, 9/00

U.S. Cl. 494—47 10 Claims



6. A separating centrifuge for the separation of a liquid into fractions of different densities, said centrifuge comprising a separating vessel and control means for controlling the separating process, said separating vessel consisting of a double-walled hollow cylindrical body defining an annular chamber and at least three conduits opening into and integral with said annular chamber, said control means including a centrifuge rotor rotatable about a first vertically extending axis of rotation, supporting means for supporting said separating vessel in said centrifuge rotor and arranged to rotate about a second horizontally extending axis of rotation, and a connection member for receiving connecting conduits of said separating vessel, said connecting conduits being held at one end against rotation and lying generally on said first axis of rotation and being mounted at the other end on said supporting means.

4,395,258

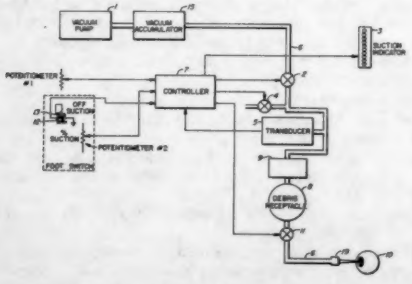
LINEAR INTRA-OCULAR SUCTION DEVICE

Carl C. T. Wang, Piedmont, Calif.; Steve Charles, Memphis, Tenn., and Joseph T. Buckingham, Moraga, Calif., assignors to Cooper Medical Devices, San Leandro, Calif.

Filed Nov. 3, 1980, Ser. No. 203,143

Int. Cl.³ A61M 31/00

U.S. Cl. 604—65 11 Claims



1. Apparatus for automatically controlling the vacuum along a conduit for suctioning material from a surgical zone comprising:

a cannula adapted to be inserted into the surgical zone for suctioning material from the surgical zone,

receptacle means for receiving the material from the cannula;

a vacuum supply which is maintained at a predetermined level;

vacuum delivery conduit means for providing communication between the vacuum supply and the receptacle means, and between the receptacle means and the cannula;

vacuum supply conduit means, including an electrically operated vacuum supply valve, adapted to control communication along said vacuum delivery conduit between said receptacle and said vacuum supply;

a vacuum exhaust control means, including an electrically operated vacuum exhaust valve adapted to be opened to the atmosphere and to control communication along said vacuum delivery conduit means between the atmosphere and said receptacle;

a pressure transducer communicating along said delivery conduit with said receptacle for detecting the vacuum level of said receptacle;

and

control means communicating with said pressure transducer and said vacuum supply conduit means and exhaust control means for automatically opening the vacuum supply conduit means when there is an insufficient vacuum level in said receptacle and for automatically opening the vacuum exhaust conduit means when there is an excessive vacuum level in said receptacle so that said receptacle is maintained at a selected vacuum level and so that the material is suctioned by the cannula from the surgical zone at the selected vacuum level.

4,395,259

DEVICE FOR THE INFUSION OF FLUIDS INTO THE HUMAN OR ANIMAL BODY

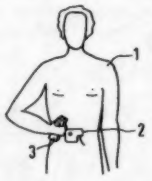
Karl Prestele, Erlangen; Manfred Franetzki, Uttenreuth, and Erich Reif, Erlangen, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 14, 1981, Ser. No. 301,780

Claims priority, application Fed. Rep. of Germany, Sep. 22, 1980, 3035670

Int. Cl.³ A61M 37/00

U.S. Cl. 604—67 28 Claims



1. An infusion system for the infusion of fluids into the human or animal body, said system comprising

(a) a metering device to be implanted within the body, having a delivery unit for the dosed delivery of fluid to the body, said delivery unit having operating circuitry for controlling operation of the delivery unit, and said metering device having coupling means for receiving an operational signal transmission and for effecting an operation in accordance therewith,

(b) an external monitor device having coupling means coupled with said metering device for supplying a monitoring signal in accordance with an operation produced at the metering device by an operational signal transmission, and

(c) evaluation means operatively associated with said external monitor device for receiving a transmission signal in accordance with an operational signal transmission transmitted to the metering device, and connected with the coupling means of the external monitor device for receiving a monitoring signal in accordance with an operation at the metering device produced by an operational signal transmission, and operative for supplying an information signal where a received monitoring signal has a predetermined relationship to a received transmission signal, the information signal thereby being indicative of receipt of the operational signal transmission by the metering device,

(d) the delivery unit comprising a roller pump and a stepping motor drive therefor, said coupling means of said metering device comprising an induction coil associated with the roller pump for coupling with the coupling means of the external monitor device, said induction coil being connected with the stepping motor drive and said stepping motor drive being actuated by an operational signal transmission so as to cause the coupling means of the external control device to supply said monitoring signal in a predetermined relationship to the operational signal transmission, and

(e) said evaluation means comprising time sensitive comparison means for receiving the transmission signal to initiate a timing comparison and receiving the monitoring signal upon actuation of the stepping motor drive by the operational signal transmission, and being operative to compare the timing relationship between said transmission signal and said monitoring signal and supplying said information signal only where a received monitoring signal has a predetermined timing relationship to a received transmission signal, said time sensitive comparison means thereby being operative to monitor for an answer back response resulting directly from an actual test operation of said stepping motor drive, as well as to discriminate such answer back response from incorrectly timed spurious signals.

4,395,260

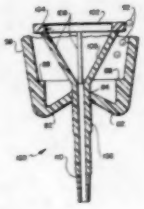
DRIP CHAMBER

Robert J. Todd, Salt Lake City, and Gordon S. Reynolds, Bountiful, both of Utah, assignors to Sorenson Research Co., Inc., Salt Lake City, Utah

Filed Jun. 1, 1981, Ser. No. 269,937

Int. Cl.³ A61M 5/16

U.S. Cl. 604—122 **18 Claims**



1. An improved drip chamber comprising:

a housing having a fluid inlet, a fluid outlet, and walls defining a chamber;

means for deflecting incoming fluid from said outlet so as to reduce turbulence of the incoming fluid;

a filter membrane carrier assembly positioned over said fluid outlet, said filter membrane carrier assembly having a means for filtering said fluid; and

means for displacing at least a portion of said filter membrane carrier assembly to release entrapped air bubbles from beneath said means for filtering said fluid.

4,395,261

VAPOR HYDROGEN PEROXIDE BLEACH DELIVERY

Charles W. Lutz, Princeton, N.J., assignor to FMC Corporation, Philadelphia, Pa.

Filed Jan. 13, 1982, Ser. No. 339,197
Int. Cl.³ D06L 3/02, 3/14; B05D 1/26
U.S. Cl. 8—111 6 Claims

1. A method for bleaching damp textiles while they are exposed to heated gases in a clothes dryer by means of hydrogen peroxide initially confined as a liquid by the inner surface of a wall of a container, at least part of said wall being a microporous, hydrophobic membrane having an effective pore size of approximately 0.01 μm to 0.4 μm in size with the exterior surface thereof accessible to the heated gases of the dryer whereby said liquid hydrogen peroxide is vaporized by the heat of said gases and delivered as a vapor through said membrane into the heated gases of the dryer primarily at a time when the textiles to be bleached are still damp, yet near the end of the drying cycle when the temperature within the dryer is the highest.

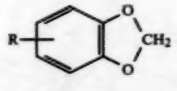
4,395,262

HAIR DYEING AGENT

Eugen Konrad, Darmstadt, Fed. Rep. of Germany, and Herbert Mager, Fribourg, Switzerland, assignors to Wella Aktiengesellschaft, Darmstadt, Fed. Rep. of Germany

PCT No. PCT/EP79/00060, § 371 Date Apr. 16, 1980, § 102(e) Date Mar. 6, 1980, PCT Pub. No. WO80/00417, PCT Pub. Date Mar. 20, 1980
PCT Filed Aug. 2, 1979, Ser. No. 196,551
Claims priority, application Fed. Rep. of Germany, Feb. 28, 1980, 2835776
Int. Cl.³ A61K 7/13
U.S. Cl. 8—410 11 Claims

1. Composition for the oxidative dyeing of hair, comprising a combination of at least one developing substance and at least one coupling substance, comprising as coupling substance at least one derivative of 1,2-methylene dioxybenzene of the general formula



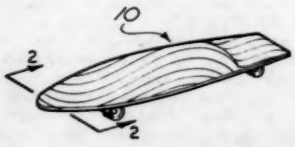
in which R signifies an OH—, NH_2—, NHR^1—, or NH^1R^2— group wherein R^1 and R^2 represent, independent of each other, an alkyl or hydroxyalkyl group with 1 to 4 carbon atoms.

4,395,263

UNITARY LAMINATE WITH PERMANENT INDICIA PATTERN: TRANSFER PRINTINGS ONTO PLASTIC-COATED RIGID PANELS

R. Elbert Davis, 1401 Valley View Rd., #425, Glendale, Calif. 91202

Filed Apr. 21, 1977, Ser. No. 789,488
Int. Cl.³ B32B 27/14; D06P 5/13
U.S. Cl. 8—471 13 Claims



1. In a sublimination transfer dyeing process in which sublimable dyestuff is transferred from an auxiliary carrier web to a support stratum, the improvement whereby a print can be formed on a non-textile stratum, comprising the steps of:

(a) laminating together as said support stratum (i) a binder layer comprising polyester resin containing 50–85 weight percent glass fiber and containing pigment and (ii) on said binder layer, a substantially pigment-free transparent layer of thermosettable material receptive to sublimatic dyestuff selected from alkyd resin, melamine formaldehyde resin and combinations thereof;

(b) curing to form a thermoset, heat resistant laminate; and

(c) transferring said dyestuff to said transparent layer by heat-induced sublimation from said auxiliary carrier web.

4,395,264

AZO COUPLING PROCESS

George W. Fenwick, Holland, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Nov. 6, 1981, Ser. No. 318,750
Int. Cl.³ C07C 113/00
U.S. Cl. 8—662 8 Claims

1. A process for coupling a beta-naphthol with a diazotized amine comprising

1. (a) dissolving a beta-naphthol in water with a strong base
   (b) precipitating the beta-naphthol with a strong acid and
   (c) cooling the slurry to about 0° C. to 15° C.
2. (a) adding a diazotized amine and
   3. (a) increasing the pH to about 1.0 to 4.0 with a strong base and
   (b) further increasing the pH to about 5.0 to 10.0 with a weak base.

4,395,265

FUEL PELLETS

Charles Reilly, 777 E. 31st St., Brooklyn, N.Y. 11210, and Richard G. Bailey, 4308 W. 82 St., Prairie Village, Kans. 66208

Filed Dec. 16, 1981, Ser. No. 331,044
Int. Cl.³ C10L 5/14; C10F 7/06
U.S. Cl. 44—15 R 10 Claims

1. A process for producing a fuel material which may be readily transported comprising the following steps:

a. Make a particulate composition of a peat binder material of combustible properties,

b. Dry the ground binder material to remove excessive moisture,

c. Mix a particulate coal or dry sludge fuel material with the said particulate binder material,

d. Pelletize this mixture in a pelletizer type machine so as to produce pellets,

e. Dry the pellets to further reduce the moisture content of the pellets.

3. The process as recited in claim 1 in which coal fines are employed as the particulate fuel material in step c.

4,395,266

STABILIZED WATER-IN-MINERAL OIL EMULSION

Kong W. Han, Oosterhout, Netherlands, assignor to Internationale Octrooi Maatschappij "Octropa" B.V., Rotterdam, Netherlands

Filed May 19, 1980, Ser. No. 150,827
Claims priority, application Netherlands, May 21, 1979, 7903961
Int. Cl.³ C10C 1/32
U.S. Cl. 44—51 15 Claims

1. Water-in-mineral oil emulsion comprising:

(a) 1–50 vol.% of water,

(b) 99–50 vol.% of a mineral oil selected from the group consisting of gasoline, kerosene, diesel oil, heavy gasoline and fuel oil,

(c) an effective proportion of a surfactant, and

(d) a finely divided stabilizer which is substantially undissolved in the constituent phases of the emulsion and forms

an interface between said phases, said stabilizer being a compound comprising at least one polar group having a dipole or being capable of forming a hydrogen bridge and at least 2 non-polar hydrocarbon groups containing at least 8 carbon atoms, said compound being selected from the group consisting of (i) a di- or tri-amide obtained by reacting a fatty acid with a compound containing 2 or 3 amino groups, (ii) the product obtained by reacting a mono-, di- and/or tri-alkanolamine soap derived from a natural or synthetic fatty acid and a quaternary ammonium salt comprising at least one substituent containing at least 8 carbon atoms, whereby the remaining substituents may consist of alkyl groups containing 1–3 carbon atoms, and (iii) a polymer obtained by reacting a polyalkyl anhydride with a compound containing at least 2 amino groups.

2. Water-in-mineral oil emulsion accordiang to claim 1, which comprises a stabilizer which has been formed in situ.

4,395,267

NOVEL METHOD OF EXTENDING A HYDROCARBON FUEL HEAVIER THAN GASOLINE

William M. Sweeney, Wappingers Falls, N.Y., assignor to Texaco, Inc., White Plains, N.Y.

Filed Mar. 26, 1980, Ser. No. 134,036

Int. Cl.³ C10L 1/18

U.S. Cl. 44—56 **2 Claims**

1. A novel hydrocarbon fuel composition heavier than gasoline comprising a hydrocarbon fuel heavier than gasoline; a water-miscible alcohol, ethanol or methanol which is substantially immiscible with said fuel; and as a cosolvent an orthoester.

4,395,268

HOT GAS COOLER FOR A COAL GASIFICATION PLANT

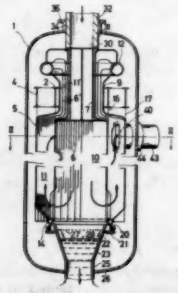
Jaroslav Zabelka, Mylhenstrasse 46, CH 84 00 Winterthur, Switzerland

Filed Sep. 18, 1981, Ser. No. 303,571

Claims priority, application Switzerland, Sep. 19, 1980, 7051/80

Int. Cl.³ C10J 3/84, 3/86

U.S. Cl. 48—67 **6 Claims**



1. A hot gas cooler for a coal gasification plant comprising

a pressure vessel having a vertically disposed casing with an inlet spigot at an upper end for receiving an exit of a reaction vessel;

an insert of polygonal cross-section of n-sides in said pressure vessel including a plurality of pipes for conducting cooling medium therethrough, said pipes being in secured relation to each other to define a fall chamber for conducting a hot gas therethrough, said insert having an inlet to said fall chamber at an upper end in sealed relation to said inlet spigot to receive a flow of hot gas, an outlet from said fall chamber at a lower end to discharge slag particles and a plurality of peripherally disposed openings to exhaust the hot gas flow from said fall chamber;

a jacket of polygonal cross-section of n-sides including a plurality of pipes for conducting a cooling medium therethrough, said pipes being secured together to form a gas-tight wall, said jacket being circumferentially offset from said inset by an angle equal to 360°/2n and spaced about said insert to define a first annular chamber therebetween communicating with said peripheral openings of said insert and sealed from said casing, said jacket being spaced from said casing to define a second annular chamber therebetween;

at least one gas exhaust passage connected to said jacket and communicating an upper end of said first annular chamber with the exterior of said casing for exhausting the cooled gas therethrough; and

means for discharging slag from said outlet of said insert, said means including a funnel passing through said pressure vessel.

4,395,269

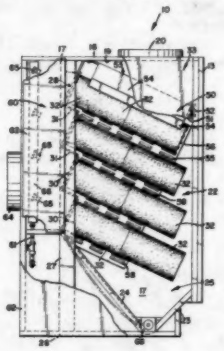
COMPACT DUST FILTER ASSEMBLY

Frederick E. Schuler, St. Paul, Minn., assignor to Donaldson Company, Inc., Minneapolis, Minn.

Filed Sep. 30, 1981, Ser. No. 307,166

Int. Cl.³ B01D 46/04, 46/48, 50/00

U.S. Cl. 55—302 **14 Claims**



5. An air filter assembly for filtering air laden with particulate matter, said assembly comprising:

a housing having a clean air chamber and a filtering chamber, said housing having an upper wall, a substantially closed bottom, and a plurality of side walls;

a clean air outlet from said clean air chamber in one of said side walls;

means separating said clean air chamber from said filtering chamber including means mounting a plurality of spaced apart, filter elements within said filtering chamber, said elements including an uppermost filter element, with each of said elements being in fluid communication with said air outlet, said mounting means positioning each of said filter elements in a generally downward, inclined direction with respect to said upper wall;

said upper wall, a portion of said side walls, and said uppermost filter element defining an airflow distribution space in said filtering chamber above said filter elements;

a dirty air inlet in a wall opening into said distribution space, whereby the velocity of the air entering said filtering chamber and passing through said distribution space is reduced;

pulse-jet cleaning means intermediate said outlet and said mounting means for removing particulate matter accumulated on said filter elements;

and a lowermost portion in said filtering chamber arranged and constructed for the collection of particulate matter, said portion incuding at least one sloping surface constructed from a material which is movably responsive in a flexing motion to the pressure differentials created by said cleaning means;

whereby the filtered particulate matter is caused to move downwardly for collection by the flexing of said sloping surface in response to the increases in pressure within said filtering chamber caused by the operation of said pulse-jet cleaning means.

4,395,270

METHOD OF FABRICATING A POLARIZATION RETAINING SINGLE-MODE OPTICAL WAVEGUIDE

Michael G. Blankenship, Corning, and Donald B. Keck, Big Flats, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Apr. 13, 1981, Ser. No. 253,224
Int. Cl.³ C03B 19/00, 37/075
U.S. Cl. 65—3.12 6 Claims

1. The method of forming an optical waveguide comprising the steps of

providing a substantially cylindrical mandrel,

providing burner means for emitting a stream of glass soot,

rotating said mandrel,

reciprocatingly moving said burner means longitudinally along said rotating mandrel to deposit on said mandrel a first coating of glass soot,

reciprocatingly moving said burner means longitudinally along said rotating mandrel to deposit on the outer surface of said first coating a second coating of glass soot having a refractive index lower than that of said first coating,

halting rotation of said mandrel,

moving said burner means longitudinally with respect to said mandrel while depositing on said second coating a first crescent-shaped longitudinally extending region of glass soot having a thermal coefficient of expansion different from that of said second coating,

rotating said mandrel 180° and thereafter again halting mandrel rotation,

moving said burner means longitudinally with respect to said mandrel while depositing a second crescent-shaped longitudinally extending region of glass soot that is of the same composition as said first region, said second region being azimuthally spaced from and diametrically opposed to said first region,

depositing on the outer surface of the resultant soot body a coating of cladding soot having a thermal coefficient of expansion similar to that of said second coating and having a refractive index equal to or lower than that of said second coating,

removing said mandrel, and

forming an optical waveguide fiber from the resultant soot preform.

5. A method of forming an optical waveguide preform comprising the steps of

providing a tube of cladding glass,

disposing centrally within said tube a first glass rod having an axially disposed core region surrounded by a layer of cladding glass,

disposing a first pair of glass rods diametrically with respect to the central rod within said tube, said first pair of rods being formed of a glass having a temperature coefficient of expansion different from that of said cladding glass, and

disposing a plurality of rods of cladding glass in at least some of the interstices between said centrally disposed rod, said first pair of rods and said tube.

4,395,271

METHOD FOR MAKING POROUS MAGNETIC GLASS AND CRYSTAL-CONTAINING STRUCTURES

George H. Beall, Big Flats; Gerald R. Mansfield, Painted Post, and Jan W. H. Schreurs, Corning, all of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Division of Ser. No. 29,577, Apr. 13, 1979, Pat. No. 4,233,169. This application May 9, 1980, Ser. No. 148,260
Int. Cl.³ C03C 3/22, 15/00
U.S. Cl. 65—31 40 Claims

1. A method for making porous bodies of magnetic glass with interconnected pores less than 10,000 A in diameter and having iron-containing, magnetic crystals enveloped therewithin with dimensions less than about 1000 A which method comprises the steps of:

(a) melting a batch for a glass which, upon cooling and/or subsequent reheating, separates into at least three phases, viz., iron-containing magnetic crystals and two co-connected, chemically-distinct, vitreous phases of different solubility;

(b) simultaneously forming the melt into a glass body and cooling to a temperature at least within the range beginning in the vicinity of the transformation range of the glass but below the miscibility temperature of said two vitreous phases, whereby separation of said two vitreous phases and development of said iron-containing magnetic crystals can be initiated;

(c) exposing said glass body to a temperature within the range beginning in the vicinity of the transformation range of the glass but below the miscibility temperature of said two vitreous phases for a period of time sufficient to induce separation of said two vitreous phases and to develop said iron-containing crystals and/or to coarsen the structure of said vitreous phases and to modify the magnetic properties of said body; and then

(d) contacting said glass body with an etchant for a period of time sufficient to remove one of said vitreous phases and thereby produce a porous glass body with interconnected pores, wherein said glass consists essentially of a vitreous silica skeleton.

4,395,272

PRESSURE SIZING OF FLOAT GLASS

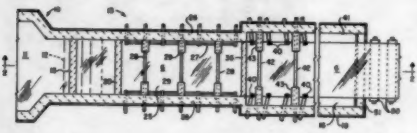
Gerald E. Kunkle, New Kensington; John E. Sensi, Arnold, and Joseph A. Gulotta, New Kensington, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 2, 1981, Ser. No. 326,890
Int. Cl.³ C03B 18/08
U.S. Cl. 65—99.5 8 Claims

1. A method of producing float glass of less than equilibrium thickness comprising: continuously metering a stream of molten glass through an opening having a width not substantially

less than the final product glass width, and depositing the stream of glass onto a molten metal pool within a pressure chamber including side basin walls for containing the molten metal, and maintaining the molten glass in the pressure chamber in contact with the side basin walls so as to cover the entire surface of the molten metal pool within the pressure chamber and to separate the molten metal from a gas space above and essentially coextensive with the molten metal pool in the pressure chamber; imposing a pressure greater than atmospheric on the molten glass in the pressure chamber by pressurizing the gas space, so as to reduce the thickness of the glass as it passes through the pressure chamber to a thickness less than the equilibrium thickness; withdrawing the glass as a thinned ribbon from the pressure chamber to a cooling chamber where the pressure is lower than in the pressure chamber, and in the cooling chamber supporting the glass ribbon on molten metal while restraining the ribbon against lateral shrinkage until the ribbon has cooled to a dimensionally stable condition; and withdrawing the dimensionally stable glass ribbon from the cooling chamber.

8. Apparatus for producing float glass of less than equilibrium thickness comprising a forming chamber having a basin adapted to hold a pool of molten metal, the forming chamber



including a pressure chamber encompassing an upstream portion of the molten metal pool, and a cooling chamber encompassing a downstream portion of the molten metal pool, the downstream end of the pressure chamber being closed by a vertically extending seal wall spaced slightly above the elevation of the molten metal only a sufficient distance to permit passage of a ribbon of glass therebetween but insufficient to permit substantial escape of pressurized gas from the pressure chamber, at least a portion of the cooling chamber basin having a width greater than the maximum width of the pressure chamber basin, an entrance opening between a source of molten glass and the pressure chamber adapted to admit molten glass into the pressure chamber and prevent escape of pressurized gas from the pressure chamber, the entrance opening having a width substantially as great as the width of the pressure chamber, an essentially enclosed gas space overlying and essentially coextensive with the portion of the basin in the pressure chamber, means to impose a pressure in the pressure chamber gas space greater than in the cooling chamber, means in the cooling chamber for engaging edge portions of a glass ribbon emerging from the pressure chamber and for restricting lateral shrinking of the glass ribbon, and an exit opening in the cooling chamber through which the glass ribbon may be withdrawn from the pool of molten metal.

4,395,273

PREPARATION OF MULTI-TRACE ELEMENT FERTILIZERS

Bernd Leutner, Frankenthal; Berndhard Purucker; Eberhard Rother, both of Ludwigshafen; Geerd F. Juergens, and Dieter Wagner, both of Schifferstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Nov. 18, 1981, Ser. No. 322,672

Claims priority, application Fed. Rep. of Germany, Nov. 28, 1980, 3044903

Int. Cl.³ C05D 5/00

U.S. Cl. 71—11 **6 Claims**

1. A process for the preparation of a multi-trace nutrient fertilizer which contains magnesium as a further nitrient and in which the complexforming trace elements are present in the form of anionic chelates with one or more N-carboxyalkylaminoacids, which comprises: reacting the N-carboxyalkylaminoacids, in the presence of water, with the trace elements or trace element compounds in a molar ratio of N-carboxyalkylaminoacids to trace elements or trace element compounds of not less than 0.8:1, at least 20% by weight of the trace element compounds being oxides, hydroxides and/or carbonates to form an anionic trace element chelate, and at the same time, or subsequently, raising the pH of the solution to 3.5–6 by adding a magnesium compound selected from the group consisting of magnesium oxide, hydroxide and carbonate, whereby said magnesium compound reacts with said anionic trace element chelate.

4,395,274

MICROBICIDAL AGENT AND ITS USE

Wilfried Paulus, and Hermann Genth, both of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 28, 1979, Ser. No. 52,872

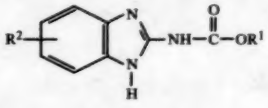
Claims priority, application Fed. Rep. of Germany, Mar. 10, 1979, 2909550

Int. Cl.³ A01N 25/00, 31/08, 43/50, 43/52

U.S. Cl. 71—67 **14 Claims**

1. A composition for killing bacteria, algae, fungi and yeast which comprises a bacteriacidally, fungicidally, algaecidally or yeasticidally effective amount of;

(a) a benzimidazolyl-alkyl-carbamate of the formula



(I)

in which

R^1 denotes an alkyl with 1 to 4 carbon atoms, and

R^2 denotes hydrogen or an alkyl with 1 to 4 carbon atoms and

(b) a phenolic compound selected from the group consisting of (2,2'-dihydroxy-5,5'-dichloro) diphenylmethane and 2 hydroxy diphenyl which is present in an amount of 0.5 to 20 parts by weight per part by weight of said carbamate.

4,395,275

MONO AND DIESTERS OF N-PHOSPHONOMETHYLGLYCINATES AS HERBICIDES

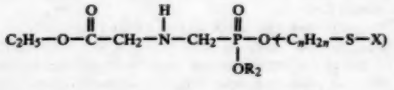
William R. Purdum, Maryland Heights, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Jun. 19, 1981, Ser. No. 275,486

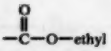
Int. Cl.³ A01N 57/28; C07F 9/40

U.S. Cl. 71—87 **12 Claims**

1. Alkylphosphonate diesters of N-phosphono-methylglycinate of the formula



wherein X is ethyl or



and R_2 is hydrogen or $-C_nH_{2n}-S-X$), n is an integer of 1 to 4.

9. A herbicidal method which comprises contacting a plant with a herbicidally effective amount of a compound of claim 1.

4,395,276

THIOSULFENAMIDE DERIVATIVES OF N-PHOSPHONOMETHYLGLYCINONITRILES AS HERBICIDES

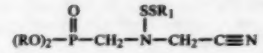
James A. Sikorski, West Lafayette, Ind., and Tommie G. Curtis, University City, Mo., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 160,677, Jun. 18, 1980, Pat. No. 4,344,572. This application Oct. 5, 1981, Ser. No. 309,323

Int. Cl.³ A01N 57/22; C07F 9/40

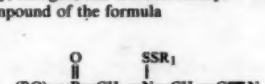
U.S. Cl. 71—87 39 Claims

1. A method of controlling undesired plants which comprises applying to said plants or plant growth medium a herbicidally effective amount of a compound of the formula



wherein R is selected from the group consisting of phenyl, naphthyl or biphenylyl; or phenyl, naphthyl or biphenylyl substituted with from 1 to 3 substituents independently selected from the group consisting of lower alkyl, lower alkoxy, lower alkylthio, alkoxycarbonyl, methylenedioxy, trifluoromethyl, cyano, nitro and halogen; and R_1 is alkyl, aralower alkyl, cycloalkyl, naphthyl or phenyl or phenyl or naphthyl or aralower alkyl substituted with from 1 to 3 substituents independently selected from the group consisting of lower alkyl, lower alkoxy, halogen, and trifluoromethyl.

14. A compound of the formula



wherein R is selected from the group consisting of phenyl, naphthyl or biphenylyl; or phenyl, naphthyl or biphenylyl substituted with from 1 to 3 substituents independently selected from the group consisting of lower alkyl, lower alkoxy, lower alkylthio, alkoxycarbonyl, methylenedioxy, trifluoromethyl, cyano, nitro and halogen; and R_1 is independently alkyl, aralower alkyl, cycloalkyl, phenyl, naphthyl or phenyl or naphthyl or aralower alkyl substituted with from 1 to 3 substituents independently selected from the group consisting of lower alkyl, lower alkoxy, halogen, and trifluoromethyl.

4,395,277

[4-(5'-TRIFLUOROMETHYLPYRIDYL-2'-OXY)-PHENOXY]-PROPIONIC ACID ESTERS WITH α-HYDROXY OR α-MERCAPTO GAMMA-BUTYROLACTONE AND THEIR USE AS HERBICIDES

Beat Böhner, Binningen, and Hermann Rempfler, Ettingen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

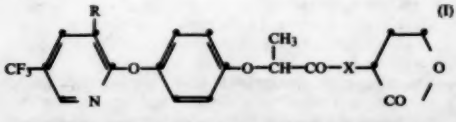
Filed Jul. 31, 1980, Ser. No. 288,860

Claims priority, application Switzerland, Aug. 11, 1980, 6060/80

Int. Cl.³ A01N 43/40; C07D 413/12

U.S. Cl. 71—94 8 Claims

1. α-[4-(5'-Trifluoromethylpyridyl-2'-oxy)-phenoxy]-propionic acid-γ-butyrolactone ester and -thioester of the formula I



(I)

wherein R is hydrogen or chlorine, and X is oxygen or sulfur.

7. A method for selectively combating gramineous weeds in dicotyledonous cultivated crops as well as in cereals and maize, which method comprises applying thereto or to the locus thereof a herbicidally effective amount of an α-[4-(5'-trifluoromethylpyridyl-2'-oxy)-phenoxy]-propionic acid-γ-butyrolactone ester of the formula I, claim 1.

4,395,278

METHOD FOR PRODUCING COBALT METAL POWDER

Clarence D. Vanderpool; Richard A. Scheithauer, and Richard G. W. Gingerich, all of Towanda, Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed Sep. 29, 1980, Ser. No. 191,882

Int. Cl.³ C22B 23/04

U.S. Cl. 75—0.5 AA 11 Claims

1. A process for producing a fine cobalt metal powder from an aqueous cobaltic ammine chloride solution comprising treating said aqueous cobaltic ammine chloride solution with an alkali metal hydroxide to form a wet cobaltic hydrated precipitate, contacting said wet cobaltic hydrated precipitate with steam at a temperature greater than about 800° C. for sufficient period of time to convert said cobaltic hydrated precipitate to cobaltous oxide and reducing said cobaltous oxide to produce a fine cobalt metal powder.

4,395,279

PLASMA SPRAY POWDER

David L. Houck, Towanda, Pa., assignor to Gte Products Corporation, Stamford, Conn.

Filed Nov. 27, 1981, Ser. No. 325,267

Int. Cl.³ B22F 1/00

U.S. Cl. 75—0.5 BB 6 Claims

1. A plasma spray powder consisting essentially of metals selected from the group consisting of nickel, iron or cobalt, or mixtures and alloys thereof, with the balance being from about 50 to about 90 percent by weight tungsten and carbon, said tungsten and carbon being present in a one to one molar ratio and said iron and nickel being present in a weight ratio of at least about 4 parts by weight iron and nickel combined to 1 part by weight cobalt, said powder having a particle size distribution of about 60 to 90 percent minus 20 microns, and less than about 15 percent minus 5 microns and consisting essentially of homogeneous plasma densified and melt alloyed particles having a substantially uniform composition.

4. A process for producing a plasma spray powder comprising preparing a uniform powder blend consisting essentially of metals selected from the group consisting of iron, nickel or cobalt being present in a weight ratio of at least 4 parts iron or nickel to 1 part cobalt with the balance of said powder being from about 50 to about 90 percent by weight tungsten and carbon, said tungsten and said carbon being present in a one to one molar ratio, said powder blend having an average particle size less than about 10 microns, agglomerating the powder to produce agglomerated particles, sintering the agglomerated particles, entraining the sintered agglomerated powder in a carrier gas, feeding the entrained agglomerated powder through a high temperature reactor having a temperature above the melting point of the highest melting component of the powder material to densify said particles, wherein said densified particles consist essentially of particles having substantially uniform composition, and comminuting and classifying said densified particles to produce a powder having a particle size distribution of about 60 to 90 percent minus 20 microns, and less than about 15 percent minus 5 microns.

4,395,280

PREHEATING PROCESS FOR STEEL-MAKING MATERIALS

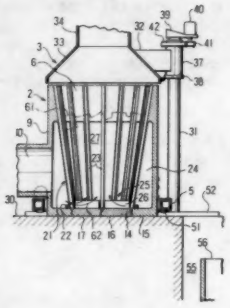
Akira Takenouchi, Aichi, and Yukio Niwa, Kounan, both of Japan, assignors to Daidotokushuko Kabushiki Kaisha, Nagoya, Japan

Filed Feb. 24, 1981, Ser. No. 237,768

Claims priority, application Japan, Feb. 29, 1980, 55-25836; Aug. 5, 1980, 55-107979

Int. Cl.³ C22B *1/00*

U.S. Cl. 75—28 **3 Claims**



1. A preheating process for steel-making materials, which comprises the steps of:

(a) preheating steel making materials by contacting said materials with waste gas fluid containing dust from a steel-making furance in a preheating furnace, some of said dust sticking to said materials.

(b) scattering any dust sticking to the heated steel-making materials by impact of dumping the materials,

(c) collecting the scattered dust, and

(d) charging the steel-making materials into the steel-making furnace after collecting the dust.

4,395,281

TREATING MOLTEN PIG IRON IN A TORPEDO

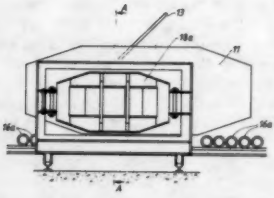
Goran Grimfjard, Västeras, Sweden, assignor to Asea AB, Västeras, Sweden

Filed Dec. 22, 1981, Ser. No. 333,335

Claims priority, application Sweden, Dec. 23, 1980, 8009116

Int. Cl.³ C21C *7/02*

U.S. Cl. 75—53 **7 Claims**



1. A method for treating molten pig iron containing sulfur, in the torpedo of a torpedo car, the torpedo comprising a horizontal generally cylindrical body having tapered ends extending horizontally from both ends thereof and the body having a substantially central opening in its top and through which a lance is inserted into the iron and a desulfurizing agent is blown through the lance into the iron by compressed gas for reaction with the sulfur in the iron; wherein the improvement comprising providing the torpedo with at least one longitudinally extending magnetically permeable window and positioning at least one straight electromagnetic stirrer longitudinally on the outside of the window so as to project a traveling multi-phase AC field into the iron causing stirring of the iron longitudinally in the torpedo.

4,395,282

DESULFURIZATION MIXTURE AND PROCESS FOR MAKING IT

Albert Braun, Hürth; Willi Portz; Georg Strauss, both of Erftstadt, and Hans-Martin Delhey, Duisburg, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 18, 1982, Ser. No. 359,228

Claims priority, application Fed. Rep. of Germany, Mar. 24, 1981, 3111510

Int. Cl.³ C22C *7/02*

U.S. Cl. 75—58 **9 Claims**

1. A mixture for the desulfurization of steel and crude iron melts comprising

(a) a CaC_2/CaO-crystalline blend containing 40 to 80 weight % CaO and having crystallized out of a fused mass of CaO and CaC_2,

(b) 1 to 6 weight % of chemically combined water having hydrated CaO in the CaC_2/CaO-crystalline blend to form $Ca(OH)_2$;

(c) 0.5 to 8 weight % free carbon; and

(d) 0.5 to 20 weight % carbonates of a substance selected from calcium, magnesium and sodium.

4,395,283

METHOD OF SWITCHING BOTTOM-BLOWN GASES AND APPARATUS THEREFOR

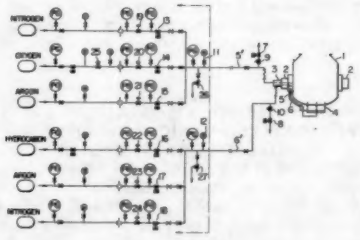
Shozo Murakami; Hukuyosi Isomura, and Yoshihiro Koga, all of Kitakyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Feb. 23, 1982, Ser. No. 351,094

Claims priority, application Japan, Feb. 27, 1981, 56-26978

Int. Cl.³ C21C *5/34*

U.S. Cl. 75—60 **8 Claims**



1. A method of switching bottom blown gases successively from a first gas to a second gas without interruption immediately after the blowing of said first gas into a molten metal in a steel making furnace, which blowing is effected from tuyeres or porous plugs through piping means connecting the tuyeres or porous plugs to gas sources, said tuyeres or porous plugs being disposed at a part of the steel making furnace below the surface of the molten metal, comprising the steps of:

increasing the pressure of gas in the piping means to a higher level than a steadystate gas pressure flow condition which occurs when switching from the first gas to the second gas is completed;

releasing into the atmosphere at least a portion of the gas in the piping means from a predetermined position in the piping means between the gas sources and said furnace when the pressure of the gas is increased to exceed said predetermined level higher than the gas pressure in the

steadystate flow condition whereby gas in said piping means is diverted from said furnace into the atmosphere; and

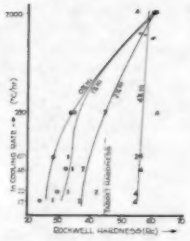
inhibiting the release of the gas into the atmosphere after a lapse of a predetermined period of time from the initiation of the release of the gas, or when the pressure of the gas flowing through the piping drops below a predetermined level.

4,395,284

ABRASION RESISTANT MACHINABLE WHITE CAST IRON

Robert J. Dawson, Newmarket, Canada, assignor to Falconbridge Limited, Toronto, Canada

Filed Jan. 18, 1982, Ser. No. 340,053
Claims priority, application Canada, Feb. 20, 1981, 371420
Int. Cl.³ C22C *38/56*
U.S. Cl. 75—123 CB **8 Claims**



1. A cast iron alloy consisting essentially of about 2.5–3.5% carbon, 0.5–1.0% manganese, 0.25–1.5% silicon, 13–19% chromium, 0.8–3.0% nickel, balance iron and incidental impurities; which is abrasion resistant in the hardened condition and machinable in the annealed condition.

5. A method of heat treating a cast iron alloy consisting essentially of about:

2.5–3.5% carbon
0.5–1.0% manganese
0.25–1.5% silicon
13–19% chromium
0.8–3.0% nickel
balance iron and incidental impurities,

comprising cooling said alloy at a rate between 100° C. and 350° C. per hour from a temperature above the austenitizing temperature so as to produce an annealed machinable alloy having a hardness of less than about 45 Rc.

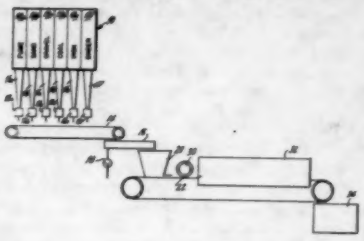
4,395,285

LOW DENSITY COMPACTS OF PREPARED MIX FOR USE IN THE PRODUCTION OF SILICON AND FERROSILICON

Rodney F. Merkert, Buffalo, N.Y., assignor to Elkem Metals Company, Pittsburgh, Pa.

Division of Ser. No. 134,205, Mar. 26, 1980, Pat. No. 4,309,216. This application Sep. 23, 1981, Ser. No. 304,652
Int. Cl.³ C22B *9/10*
U.S. Cl. 75—256 **8 Claims**

1. Pieces of a low density, porous compact for use as the feed to an electric furnace in the production of silicon and ferrosilicon comprising finely-divided silica-containing material including at least about 25 parts by weight of silica fume per 100 parts by weight of total silica, and a finely-divided carbonaceous reducing agent in an amount such that the total carbon ranges from about 35 to 50 parts by weight carbon per 100 parts by weight of total silica; the compact having an apparent density of between about 0.8 and 1.2 grams per cubic centimeter, a bulk density of between about 25 and 40 pounds per cubic



foot and an internal porosity of between about 50 and 60% voids.

4,395,286

WATER-BASED COATING OIL

Robert J. Sturwold, Cincinnati, Ohio, assignor to The Cincinnati-Vulcan Company, Cincinnati, Ohio

Filed Jun. 30, 1982, Ser. No. 393,718
Int. Cl.³ C09D *5/08*
U.S. Cl. 106—14.13 **13 Claims**

1. An aqueous coating composition for providing corrosion and rust protection for metal surfaces comprising a compatible mixture of the following components:

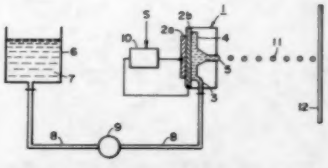
a sulfonate selected from the group consisting of monovalent metal and amine salts of sulfonic acids;
a polybasic fatty acid;
an alkanolamide; and
a water soluble ether wherein said components are provided in an effective amount to provide rust and corrosion protection for a metal surface and to provide a compatible solution.

4,395,287

LIQUID RECORDING MATERIAL

Masatsune Kobayashi, Yokohama; Seiko Matsumoto, Atsugi; Masahiro Haruta, Funabashi, and Tokuya Ohta, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 23, 1981, Ser. No. 323,881
Claims priority, application Japan, Dec. 1, 1980, 55-169862; Dec. 1, 1980, 55-169863; Dec. 1, 1980, 55-169864
Int. Cl.³ C09D *11/02*
U.S. Cl. 106—20 **13 Claims**



1. A liquid recording material comprising a recording agent for forming a recording image and a liquid vehicle for dissolving or dispersing said recording agent therein,

characterized in that a polyalkylene glycol having an average molecular weight of 150 to 350 (A component) and a polyalkylene glycol having an average molecular weight of 400 to 750 (B component) are incorporated in combination in said material, wherein the weight ratio of said A component to said B component is in the range of from 10:1 to 1:10.

4,395,288

LIQUID RECORDING MEDIUM

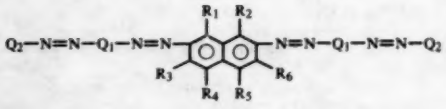
Tsuyoshi Eida, Chiba; Yasuhiro Yano, Tokyo; Masahiro Haruta, Funabashi; Yohji Matsufuji, Tokyo, and Tokuya Ohta, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 54,489, Jul. 3, 1979, abandoned. This application Apr. 5, 1982, Ser. No. 365,731
Claims priority, application Japan, Jul. 4, 1978, 53-81122
Int. Cl.³ C09D 11/02
U.S. Cl. 106—22 18 Claims

1. In an ink jet recording process for discharging a liquid recording medium in the form of droplets for recording from a discharge orifice in a recording head, the improvement which comprises employing a liquid recording medium comprising:

(a) a carrier liquid selected from the group consisting of water and a mixture of water and a water-soluble organic solvent; and

(b) a recording agent having the formula

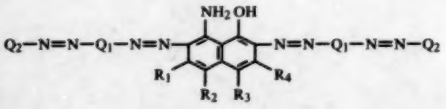


wherein said recording agent has 2–8 sulfo groups per molecule, each in the form of a sodium salt or quaternary ammonium salt and wherein the Q_1 radicals are similar or dissimilar members selected from the group consisting of phenylene and naphthalene, the Q_2 radicals are similar or dissimilar members selected from the group consisting of phenyl and naphthyl, the Q_1 radicals and the Q_2 radicals may be unsubstituted or amino substituted, hydroxyl substituted or sulfo substituted, and R_1–R_6 are similar or dissimilar members selected from the group consisting of hydrogen, amino, hydroxyl and sulfo.

10. In an ink jet recording process for discharging a liquid recording medium in the form of droplets for recording from a discharge orifice in a recording head, the improvement which comprises employing a liquid recording medium comprising:

(a) a carrier liquid selected from the group consisting of water and a mixture of water and a water-soluble organic solvent; and

(b) a recording agent having the formula



wherein said recording agent has 2–8 sulfo groups per molecule, each in the form of a sodium salt or quaternary ammonium salt and wherein the Q_1 radicals are similar or dissimilar members selected from the group consisting of phenylene and naphthalene, the Q_2 radicals are similar or dissimilar members selected from the group consisting of phenyl and naphthyl, the Q_1 radicals and the Q_2 radicals may be unsubstituted or amino substituted, hydroxyl substituted or sulfo substituted, and R_1–R_4 are similar or dissimilar members selected from the group consisting of hydrogen and sulfo.

4,395,289

PROCESS FOR PRODUCING CONCRETE

Anatoly A. Balakirev, and Boris A. Balakirev, both of Chimkent, U.S.S.R., assignors to Kazakhsky Khimiko-Tekhnologichesky Institut, Chimkent, U.S.S.R.

Filed Dec. 3, 1981, Ser. No. 327,055
Int. Cl.³ C04B 7/02
U.S. Cl. 106—98 15 Claims

1. A process for producing concrete comprising mixing barkhan sand with a fuel selected from the group consisting of a liquid fuel and a solid fuel, and with a plastic binder selected from the group consisting of clay, loess, loam and surfactant which liquifies and reduces water-consumption of the composition, said plastic binder being present in an amount sufficient to provide for granulation of said sand and said fuel and, the components of the mixture being in the following proportions in percent by weight:

barkhan sand: 95 to 30
fuel: 3 to 20
plastic binder: 2 to 60;

granulating the resulting charge; calcining the granules at a temperature ranging from 1,000° to 1,600° C.; crushing the calcined material; mixing the crushed material with cement and water, cement being used in an amount of from 10 to 100% by means of the calcined material and water in an amount of from 10 to 60% by mass of the total of the calcined material and cement.

4,395,290

METHOD OF MANUFACTURING CEMENT RAW MIX

Osvaldo A. Oller, Cape Girardeau, Mo.; Eric R. Hansen, Omaha, Neb.; and Gerad L. Eaker, Cape Girardeau, Mo., assignors to Gulf & Western Industries, Inc., New York, N.Y.

Filed Jan. 13, 1982, Ser. No. 339,089
Int. Cl.³ C04B 7/02
U.S. Cl. 106—100 21 Claims

1. A method for regulating the mixture of limestone with other raw materials to produce a cement raw mix of desired composition, said method comprising the steps of:

(1) estimating the chemical composition of the limestone and the several other raw materials;

(2) selecting the desired characteristics (Ch) of the overall raw mix composition;

(3) determining the relative proportions (W_i) of raw material to produce raw mix of the desired characteristics (Ch_D);

(4) producing raw mix for a time interval by mixing raw materials in relative proportions (W_i);

(5) after producing the raw mix for the time interval, directly analyzing the chemical composition of the raw mix and calculating the actual characteristics (Ch_A) of the raw mix;

(6) determining the theoretical relative proportions (T_i) of the raw materials that could have theoretically produced the actual characteristics of the raw mix;

(7) adjusting the estimated chemical compositions of the limestone and the several other raw materials by adjusting estimated components in response to the degree of divergence between T_i and W_i in the limestone and for the several other raw materials;

(8) reselecting the desired characteristics of the raw mix composition (Ch_D) over the next subsequent time interval to adjust the overall raw mix towards the overall desired characteristics (Ch); and

(9) repeating steps three through eight.

4,395,291

PROCESS FOR MAKING NON-DUSTING HIGH LEAD OXIDE-LOW SILICA ADDITIVE

Armand Limare, Bouillet; Bernard Razumowski, Plaisir, and Claude Sindezingue, Senlis, all of France, assignors to Societe Anonyme Societe Miniere et Metallurgique de Penarroya, Paris, France

Continuation of Ser. No. 128,259, Mar. 7, 1980, abandoned. This application Mar. 19, 1982, Ser. No. 359,781
Claims priority, application France, Mar. 9, 1979, 79 06049
Int. Cl.³ C09C 1/14
U.S. Cl. 106—297 9 Claims

1. A process for producing a lead additive which contains a lead oxide and an alkaline silicate having a weight ratio of lead, calculated as PbO, to alkaline silicate, calculated as SiO_2, between about 18:1-32:1, a moisture content of less than or equal to about 2%, and a density of less than about 5 g/cm³, the process comprising the steps of:

(a) mixing the lead oxide with all or a portion of a predetermined amount of a water-soluble alkaline silicate to obtain a mixture comprising a malleable paste;

(b) conditioning the mixture obtained in step (a) to produce granules having a predetermined size;

(c) subjecting the mixture obtained in step (a) to a heat treatment of drying or drying and fritting, comprising a first phase conducted at a temperature of between about 50° and 200° C. for a period from several minutes to about one hour and a second phase conducted at a substantially higher temperature than the first phase of between about 80° and 700° C. for a period of from several minutes to about one hour; and

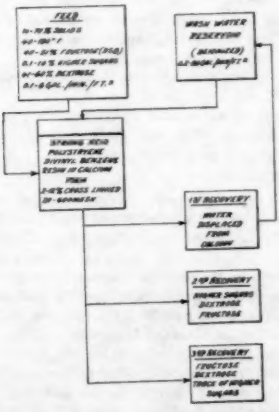
(d) adding any remaining portion of the water-soluble alkaline silicate to the mixture obtained in step (a).

4,395,292

HIGH FRUCTOSE SYRUP AND PROCESS FOR MAKING SAME

Edward Katz, St. Louis County; Henry S. Davis, St. Louis, and Barrett L. Scallet, Clayton, all of Mo., assignors to Anheuser-Busch, Incorporated, St. Louis, Mo.

Filed Apr. 10, 1974, Ser. No. 459,788
Int. Cl.³ C13K 1/00, 11/00
U.S. Cl. 127—29 20 Claims



14. A non-crystallizing syrup derived from a syrup having a D.E. of over 90 and a fructose content of less than 49%, said non-crystallizing syrup consisting essentially of, on a dry solids basis, from about 52% to about 95% fructose, less than about 48% dextrose and from about 0.5% to about 2% higher molecular weight sugars.

16. A process for producing a fructose rich non-crystallizing syrup derived from starch comprising the steps of:

(a) passing a starch conversion syrup feed having on a dry solids basis more than 49% dextrose, about 25 to 51% fructose and about 0.1 to about 8% higher saccharides through a molecular exclusion column,

(b) removing dextrose and higher saccharides from the syrup, and

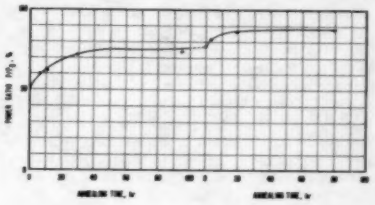
(c) recovering a product containing more than about 52% fructose, less than about 48% dextrose and less than about 2% higher saccharides.

4,395,293

ACCELERATED ANNEALING OF GALLIUM ARSENIDE SOLAR CELLS

Ronald C. Knechtli, Woodland Hills; Robert Y. Loo, Los Angeles, and G. Sanjiv Kamath, Malibu, all of Calif., assignors to Hughes Aircraft Company, El Segundo, Calif.

Filed Mar. 23, 1981, Ser. No. 246,360
Int. Cl.³ H01L 21/263; C03C 3/04
U.S. Cl. 148—1.5 7 Claims



1. A method of repairing GaAs solar cell damaged by radiation which comprises:

(a) thermally annealing the damaged solar cell by maintaining the solar cell at a temperature substantially above the temperature at which the solar cell operates most efficiently for a predetermined period of time, while substantially simultaneously;

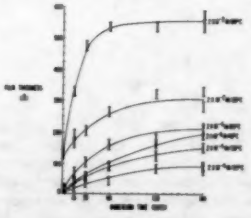
(b) injecting minority carriers into the damaged solar cell at an energy level of the order of circuit potentials.

4,395,294

COPPER CORROSION INHIBITOR

Norris D. Hobbins, North Plainfield, and Ronald F. Roberts, Somerset, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 17, 1981, Ser. No. 293,446
Int. Cl.³ C23F 5/02
U.S. Cl. 148—6.14 R 13 Claims



1. A product formed by the process of contacting a metal comprising copper with an oxidation inhibitor to form a protective coating CHARACTERIZED IN THAT said oxidation inhibitor comprises 5-methyl benzimidazole and where said protective coating has a thickness of at least 5 nm.

4,395,295
PROCESS FOR TREATING COPPER-ALUMINUM-SILICON ALLOYS TO IMPROVE FATIGUE STRENGTH

Eugene Shapiro, Hamden, Conn., assignor to Olin Corporation, New Haven, Conn.

Filed May 28, 1982, Ser. No. 382,865
Int. Cl.³ C22F 1/08
U.S. Cl. 148—11.5 C **8 Claims**

1. A process for providing a substantially single phase copper alloy having a fatigue strength in a longitudinal direction substantially in excess of about 31 ksi and in a transverse direction substantially in excess of about 46 ksi and having a fatigue life of at least about 10 million cycles, said process comprising:

providing a copper alloy consisting essentially of from about 1% to about 5% silicon, from about 2% to about 12% aluminum and the balance essentially copper;

cold working said alloy from about 80% to about 90%; and

heating said alloy at a temperature of about 250° C. to about 300° C. for a time period of about 30 minutes to about 24 hours.

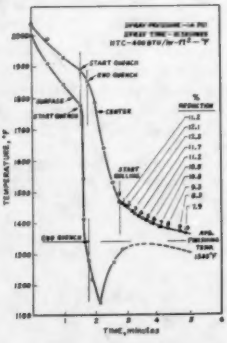
8. A flexible contact member for an ink jet printer, said contact member comprising:

a member formed from a copper alloy, said copper alloy consisting essentially of from about 1% to about 5% silicon, from about 2% to about 12% aluminum and the balance essentially copper and having a fatigue strength in a longitudinal direction substantially in excess of about 31 ksi and in a transverse direction substantially in excess of about 46 ksi and a fatigue life of at least about 10 million cycles from being cold worked from about 80% to about 90% and being subjected to a final heat treatment at a temperature of about 250° C. to about 300° C. for a time period of about 30 minutes to about 24 hours.

4,395,296
THERMAL MECHANICAL PROCESS FOR STEEL SLABS AND THE PRODUCT THEREOF

Halle Abrams, Allentown, Pa., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Jun. 22, 1981, Ser. No. 276,103
Int. Cl.³ C21D 8/02
U.S. Cl. 148—12.4 **4 Claims**



1. In a thermal-mechanical process for treating a carbon or low alloy steel slab by a modified controlled rolling schedule to improve the strength and toughness properties of said steel slab, where such schedule includes a high temperature reduction of the steel slab, and quenching the steel slab to reduce the time for initiating a second low temperature reduction of the steel slab to final thickness, the improvement comprising in combination therewith the steps of

(a) subjecting said steel slab to a high temperature reduction step at a temperature above 2000° F. (1053° C.),

(b) quenching said steel slab from a temperature above about 1900° F. (1038° C.) by the application of low pressure water uniformly to the surfaces thereof, where the rate and time of application of said water is such as to achieve a heat transfer coefficient within the range of 200 to 600 BTU/HR-ft²-°F.,

(c) ceasing said quenching prior to the surfaces of said steel slab reaching a temperature of about 1000° F. (539° C.) to avoid transformation of said steel slab to martensite,

(d) holding said steel slab for a period of time to reduce the thermal gradient from surface to center thereof to a range of 50° to 150° F. (28° to 83° C.),

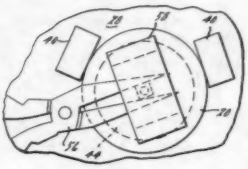
(e) subjecting the steel slab to said second reduction at an average temperature of 1450° to 1750° F. (739° to 954° C.) to form a steel plate, and

(f) cooling said steel plate to ambient temperature, whereby such plate is characterized by a fine-grained microstructure that is essentially grain size symmetrical from the center to the surface of the plate.

4,395,297
BONDING PROCESS FOR SECURING OBJECTS TO A SMOOTH SURFACE

Howard F. Patterson, 1840½ W. High St., Springfield, Ohio 45504

Filed Aug. 25, 1982, Ser. No. 411,262
Int. Cl.³ G01B 5/00; C09J 5/02
U.S. Cl. 156—64 **10 Claims**



1. The method of securing an object to a smooth surface comprising the steps of

contacting a thermally activated adhesive substrate with a solvent rendering said adhesive substrate tacky, said adhesive substrate, until so contacted, being in a non tacky state at ambient atmospheric temperature,

affixing said tacky adhesive substrate to said surface,

supplying heat to said object apart from said surface and said adhesive substrate thereon,

pressing a surface of said heated object against said adhesive substrate, and

allowing the object of cool under pressure so as to make contact with the adhesive substrate.

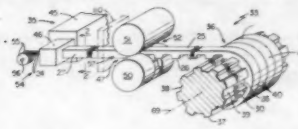
4,395,298
METHOD AND APPARATUS FOR MAKING TOOTHED BELTS AND BELT MADE EMPLOYING SAME

Robert E. Wetzel, Springfield, Mo.; Wayne C. Fieler, Orangeburg, S.C., and Gerald C. Hollaway, Springfield, Mo., assignors to Dayco Corporation, Dayton, Ohio

Continuation of Ser. No. 205,832, Nov. 10, 1980, abandoned. This application Apr. 28, 1982, Ser. No. 372,585
Int. Cl.³ B29D 17/00; B29H 7/22
U.S. Cl. 156—137 **26 Claims**

1. In a method of making toothed endless power transmission belts each having a particular thickness and comprising the steps of, forming a polymeric material to define an elongate toothed belt element, helically wrapping said toothed belt element on cylinder means with successive helical turns in adjoining side-by-side relation and with each tooth of each turn in substantial axial alignment with associated teeth of other helical turns, bonding said adjoining helical turns together to define a toothed belt sleeve, and cutting said sleeve to

define a plurality of said toothed belts, the improvement wherein said forming step comprises the steps of defining hot strip means of said polymeric material with said strip means having an overall substantially self-supporting quadrilateral cross-sectional configuration throughout the length thereof and a thickness throughout the length thereof roughly equal to said particular thickness, disposing load-carrying means in said hot strip means with said load-carrying means comprising at least one elongate flexible member that forms a corresponding helically wound load-carrying means in said endless belts, and thereafter working said self-supporting quadrilateral cross-sectional configured strip means to define said toothed belt ele-



ment with a thickness at the teeth thereof roughly equal to said particular thickness and prior to said step of helically wrapping said toothed belt element on said cylinder means, said disposing step comprising the step of disposing said flexible member axially along and within said hot strip means prior to said working step so that said hot strip means engages said flexible member substantially completely around the same throughout substantially the entire length thereof that is disposed within said hot strip means, said working step comprising the step of working a portion of said hot strip means along its entire length while keeping said flexible member substantially intact to define said toothed belt element having said flexible member extending in a rectilinear path along its full length.

4,395,299

BONDED BULK GRAPHITE AND PROCESS FOR BONDING

Dennis M. Riggs, Simpsonville, S.C., and Edward L. Harvey, Watertown, Mass., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 21, 1981, Ser. No. 295,167
Int. Cl.³ C09J *3/30*
U.S. Cl. 156—285 **5 Claims**

1. A process for bonding graphite pieces together wherein a graphitizable binder consisting essentially of a liquid crystalline component of pitch obtained by extracting an isotropic pitch with a hydrocarbon solvent to yield a solvent insoluble fraction which softens at about 240° C. and becomes very fluid at about 300° C. to about 500° C. is spread uniformly over at least one of the two graphite surfaces to be bonded together, the pieces are then joined and held in intimate contact and the entire assemblage is heated under vacuum or in an inert atmosphere to a temperature in the range of from about 700° C. to about 3000° C. under a pressure of from about 20 psi to about 1000 psi applied in a direction normal to the bond interface until bonding is effected.

4,395,300

BASE CUP APPLYING APPARATUS AND METHOD

Wolfgang Hoffmann, Turlock, Calif., assignor to B & H Manufacturing Company, Inc., Ceres, Calif.

Continuation of Ser. No. 84,594, Oct. 15, 1979, Pat. No. 4,300,966. This application Oct. 14, 1981, Ser. No. 311,420
Int. Cl.³ B29C *27/10*
U.S. Cl. 156—294 **2 Claims**

1. Apparatus for applying flat bottom cups to the bottoms of round bottom containers comprising:

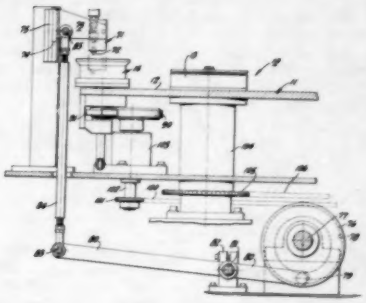
(a) a cup holder adapted to hold a cup in upright position and capable of spinning about the common axis of the cup and the holder,

(b) means at a cup delivery station for delivering a cup to the holder in such position,

(c) means for transporting the holder and cup to an adhesive applying station,

(d) means for spinning the holder and cup in upright position at such adhesive applying station and for applying adhesive to the interior of the spinning cup,

(e) means for then transporting the holder and the cup to a container delivery station,



(f) means for transporting a container to such delivery station and for depositing the container within the cup to adhere it to the cup,

(g) means for separating the container and adhering cup from the holder, and

(h) means for transporting the empty holder back to the said cup delivery station.

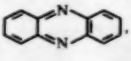
4,395,301

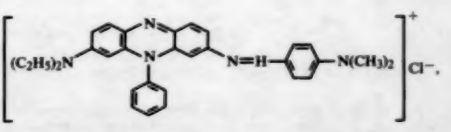
ADHESIVE COMPOSITIONS AND METHOD

Herbert Bauer, Lutry, Switzerland; Gerhard Piestert, Schwetzingen, and Heinz G. Gilch, Bad Homburg-Kirdorf, both of Fed. Rep. of Germany, assignors to USM Corporation, Farmington, Conn.

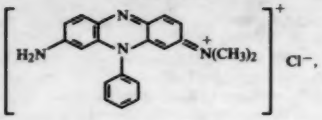
Filed Nov. 24, 1980, Ser. No. 199,348
Int. Cl.³ C09J *5/02*; C08F *20/10*
U.S. Cl. 156—307.5 **12 Claims**

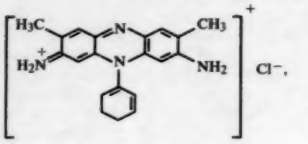
1. A two part adhesive composition curable on combination at room temperature to provide a cured adhesive composition, one part of the composition being a polymerizable adhesive part comprising a source of free radicals and an ethylenically unsaturated monomer selected from the group consisting of diacrylates or dimethacrylates of mono, di, tri or tetraethylene glycol, trimethacrylates from trihydric alcohols, hydroxy and glycidyl terminated esters of acrylic and methacrylic acid and reaction products of these having two or more acrylate or methacrylate terminal groups, acrylates and methacrylates derived from epoxy resins and, mixtures of these monomers, the other part being an activator part and comprising an azine dye material which can be reacted with a reducing agent to provide a product capable of initiating curing of the first part and where said azine dye material is selected from the group consisting of:

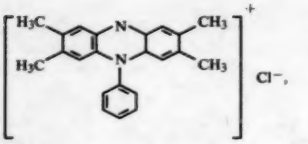


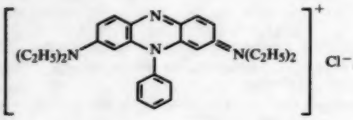


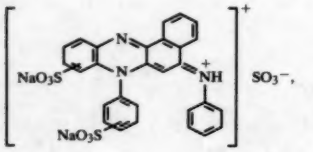
-continued

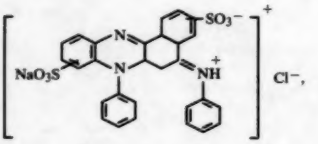


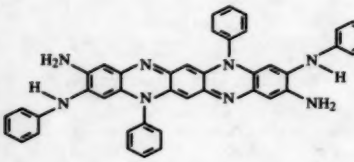


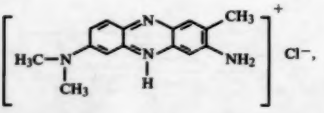












or mixtures of these and where said activator further includes a promoter selected from the group consisting of sulfur containing compounds, transition metal compounds and mixtures of these.

12. A method of adhesively bonding two air-impervious substrates at ambient temperature which comprises the steps of

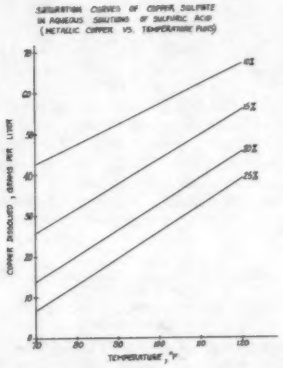
(a) applying an activator part of claim 1 to a surface of one or both of the substrates,
(b) allowing the applied activator part to dry,
(c) applying the polymerizable adhesive part of claim 1 to one of the surfaces carrying the applied activator,
(d) pressing the substrates together with the polymerizable and activator compositions in intimate contact with exclusion of air and
(e) allowing polymerization of the monomer to form and adhesive bond between the surfaces.

4,395,302

METAL DISSOLUTION PROCESS USING H_2O_2—H_2SO_4 ETCHANT

Constantine I. Courduvelis, Orange, Conn., assignor to Enthone Incorporated, West Haven, Conn.

Filed Dec. 10, 1981, Ser. No. 329,650
Int. Cl.³ C23F *1/00*; B44C *1/22*; C03C *15/00, 25/06*
U.S. Cl. 156—642 **8 Claims**



1. In a process for dissolving a metal by etching with an aqueous solution, wherein the aqueous etching solution includes initial predetermined high levels of of H_2O_2 and H_2SO_4 in water, the improvement comprising:

etching the metal from work pieces with the etching solution while permitting the concentration of H_2SO_4 in the etching solution to decrease from its high level to a predetermined low level which is not more than about one-half of the predetermined high level, and until the concentration of etched metal dissolved in the etching solution reaches a predetermined level;

removing the etching solution from use;

adding H_2SO_4 to the etching solution to increase the H_2SO_4 concentration to the predetermined high level;

allowing the metal dissolved in the etching solution to precipitate out of the etching solution, and

recycling the metal-depleted etching solution to the etching step.

4,395,303

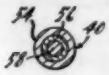
METHOD OF MANUFACTURING THIN-WALLED CORROSION RESISTANT METALLIC OBJECTS

Charles R. Weir, Bloomfield Hills, Mich., assignor to Masco Corporation, Taylor, Mich.

Filed Apr. 22, 1981, Ser. No. 256,003
Int. Cl.³ C23F *1/02*
U.S. Cl. 156—656 **31 Claims**

1. A method of making a thin-walled corrosion resistant end product from a workpiece comprised of a starting metal not resistant to an etchant and from an alloying metal which is selectively soluble in said starting metal to produce an alloy

metal impervious to said etchant, the method comprising the consecutive steps of forming said workpiece into the shape of said end product, forming an alloy case of said alloy metal on



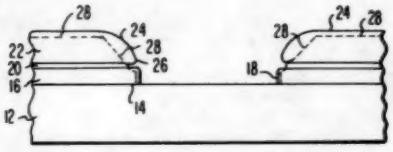
a surface of said workpiece, and exposing said workpiece to said etchant to remove the portion of said workpiece which is not alloyed.

4,395,304

SELECTIVE ETCHING OF PHOSPHOSILICATE GLASS

Werner Kern, Hightstown, N.J., and George L. Schnable, Lansdale, Pa., assignors to RCA Corporation, New York, N.Y.

Filed May 11, 1982, Ser. No. 377,001
Int. Cl.³ B44C 1/22; C03C 15/00, 25/06
U.S. Cl. 156—657 **8 Claims**



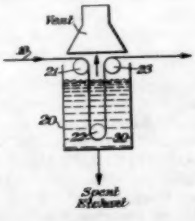
1. An acidic etchant solution for the preferential etching of phosphosilicate glass in the presence of silicon dioxide consisting essentially of at least about 80 weight percent of a carboxylic acid, and between about 1 and 10 weight percent of both hydrogen fluoride and water.

4,395,305

CHEMICAL ETCHING OF ALUMINUM CAPACITOR FOIL

Alfred Whitman, Williamstown, Mass., assignor to Sprague Electric Company, North Adams, Mass.

Filed Aug. 23, 1982, Ser. No. 410,271
Int. Cl.³ C23F 1/00
U.S. Cl. 156—665 **6 Claims**



1. A process for the chemical etching of aluminum capacitor foil to produce a fine tunnel etch structure comprising passing said foil through an aqueous etchant bath containing sodium chloride and sulfuric acid, the weight percentage of said sulfuric acid being at least equal to the weight percentage of said sodium chloride.

4,395,306

METHOD FOR PREPARING FIBROUS MATS FROM A FIBROUS SUSPENSION

George R. Killat, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 117,166, Jan. 31, 1980, abandoned. This application Jan. 8, 1982, Ser. No. 337,923
Int. Cl.³ C04B 43/02
U.S. Cl. 162—156 **16 Claims**

1. An improved method for preparing a fibrous mat or sheet by depositing a layer of a thickened fibrous suspension of synthetic fibers and an aqueous suspending medium thickened by a carboxamide synthetic addition polymer on a support, removing substantially all of said suspending medium to leave a fibrous mat with a residuum of a minor amount of said carboxamide polymer on the fibers, the improvement wherein said carboxamide polymer is reacted with a hypohalite to form a reaction product in said suspending medium, which as said residuum will cross-link to provide a fibrous mat of improved strength.

4,395,307

THERMOTROPIC LIQUID CRYSTAL POLYMER PULP AND METHOD OF PREPARATION THEREOF WHEREIN SAID POLYMER COMPRISES RECURRING UNITS WHICH CONTAIN A 2,6-DIOXYANTHRAQUINONE MOIETY

John R. Kastelic, Rockaway; Larry F. Charbonneau, Chatham, and Thomas P. Carter, Jr., Parsippany, all of N.J., assignors to Celanese Corporation, New York, N.Y.

Filed Nov. 9, 1981, Ser. No. 319,521
Int. Cl.³ D21F 11/00
U.S. Cl. 162—157.3 **18 Claims**

1. An improved method of providing a pulp comprised of fibrils of a polymer which exhibits desirable thermal stability and chemical and solvent resistance comprising the steps of:

providing a shaped article comprised of a polyester capable of forming an anisotropic melt phase which comprises not less than about 5 mole percent of recurring units which units comprise a 2,6-dioxyanthraquinone moiety; and

masticating said shaped article to form a pulp comprised of fibrils of said polyester.

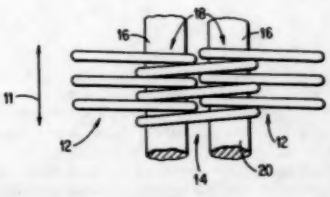
12. A pulp comprised of fibrils of a polyester which is capable of forming an anisotropic melt phase and which comprises not less than about 5 mole percent of recurring units which units comprise a 2,6-dioxyanthraquinone moiety.

4,395,308

SPIRAL FABRIC PAPERMAKERS FELT AND METHOD OF MAKING

Donald Dawes, Waycross, Ga., assignor to Scapa Dyers Inc., Waycross, Ga.

Filed Jun. 12, 1981, Ser. No. 273,031
Int. Cl.³ D21F 1/10; D04H 3/02
U.S. Cl. 162—232 **36 Claims**



1. A papermakers fabric comprising:

a plurality of hinge yarns, all of said hinge yarns extending in a common direction; and

a plurality of spiral coils disposed in a common plane in a

side-by-side relationship, each of said coils extending in said common direction, adjacent coils of said spiral intermeshed and joined together in a hinged relationship by at least one of said hinge yarns, said hinge yarns having non-circular cross sections.

23. A dryer fabric comprising:

a plurality of spiral coils arranged side-by-side in a common plane with adjacent coils being joined together by a hinge yarn in a hinged relationship, said coils providing a flat paper receiving surface and a flat machine roll contacting surface, two of said hinge yarns occupying substantially the entire interior of any given spiral coil.

24. The method of making a dryer fabric comprising the steps of:

positioning a plurality of spiral coils in a common plane in a side-by-side relationship;

intermeshing adjacent coils;

joining said intermeshed coils through the introduction of a hinge yarn of non-circular cross section to create a hinged relationship between the adjacent coils; and

subjecting the fabric to heat treatment while under controlled tension in order to cause said spiral yarns to flatten and press up against the long surfaces of said non-circular yarns.

28. A papermakers fabric comprising:

a plurality of hinge yarns, all of said hinge yarns extending in a common direction; and

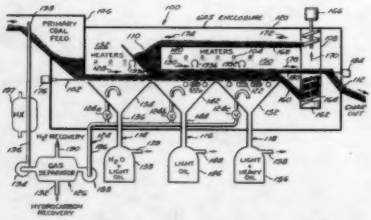
a plurality of spiral coils disposed in a common plane in a side-by-side relationship, each of said coils extending in a common direction, adjacent of said spiral coils being intermeshed and joined together in a hinged relationship by at least one of said hinge yarns, each of said spiral coils formed from yarns having a non-circular cross section.

4,395,309

FRACTIONAL DISTILLATION OF HYDROCARBONS FROM COAL

Ernest P. Esztergar, 6308 Avenida Cresta, La Jolla, Calif. 92037

Filed Nov. 3, 1980, Ser. No. 203,255
Int. Cl.³ C10B *49/06, 49/18, 57/02*
U.S. Cl. 201—22 **16 Claims**



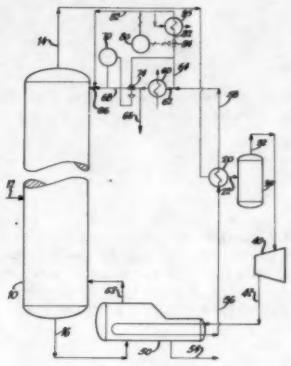
1. The process for recovering liquid fuel from coal comprising continuously forming a bilayer coal bed on a foraminous conveyor, passing the coal bed through a substantially oxygen free processing zone, heating the bed in said zone to a temperature of higher than about 550° F., while maintaining the bottom of the bed at a temperature of not higher than about 450° F., removing the top of the coal bed bilayer from the processing zone as product char, recycling the bottom of the coal bed bilayer to the processing zone to form the top of a coal bed bilayer in another pass through the processing zone, and removing liquid through the foraminous conveyor as product liquid fuel.

4,395,310

FRACTIONATION SYSTEM

John E. Idenden, Belleville, N.J., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Jul. 14, 1981, Ser. No. 283,231
Int. Cl.³ B01D *3/42*
U.S. Cl. 203—2 **4 Claims**



1. A method for reducing the energy input to a fractionation system comprising a fractionation zone, a reboiler zone communicating with the fractionation zone, and a compression zone communicating with the fractionation zone and the reboiler zone, said method comprising:

A. introducing a hydrocarbon feed into the fractionation zone, the fractionation zone adapted to separate the feed into an overhead fraction and a bottoms fraction;

B. passing at least a portion of the bottoms fraction from the fractionation zone through a reboiler zone for reheating prior to returning bottoms fraction to the fractionation zone;

C. passing overhead fraction through a compression zone wherein the overhead fraction is compressed;

D. passing substantially all the overhead fraction from the compression zone through the reboiler zone, the compressed overhead fraction transferring heat to the bottoms fraction;

E. returning an overhead fraction consisting of a liquid phase quantity and a vapor phase quantity to the fractionation zone;

F. monitoring the composition of at least one of the fractions separated in the fractionation zone; and,

G. regulating the rate of said liquid phase quantity of the overhead fraction returned to the fractionation zone sufficient to thereby reduce the energy input to the fractionation system as compared to a fractionation system having no compression zone.

4,395,311

PREPARATION OF AMINOMETHANOLS

Charles J. McDonald, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Nov. 30, 1981, Ser. No. 325,946
Int. Cl.³ B01D *3/10, 3/34*
U.S. Cl. 203—34 **8 Claims**

1. A process for the purification of a reaction mixture containing an acid-soluble aminomethanol, and an unreacted aldehyde having 1 to 3 carbon atoms, said aminomethanol being represented by the general formula:

$$(R)_2NCHOH$$
$$|$$
$$R_1$$

wherein R_1 is hydrogen or an alkyl group having 1 or 2 carbon atoms and each R is independently hydrocarbyl or inertly substituted hydrocarbyl or both R groups are collectively a divalent hydrocarbon or ether radical which combine with the nitrogen of the aminomethanol to form a heterocyclic ring represented by the formula:

said process comprising the steps of:

(a) contacting the reaction mixture with an acid of sufficient strength and quantity to effect protonation of the aminomethanol under conditions such that essentially all of the aminomethanol is protonated, and

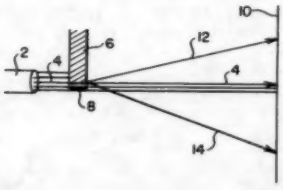
(b) distilling the acidified reaction mixture under reduced pressure under conditions including a temperature at or below 85° C. such that the amount of said unreacted aldehyde in the reaction mixture is reduced.

4,395,312

METHOD AND APPARATUS FOR THE ANALYSIS OF SOLUTION ADJACENT AN ELECTRODE

Richard L. McCreery; Clyde W. McCurdy, and Paula J. Rossi, all of Columbus, Ohio, assignors to The Ohio State University Research Foundation, Columbus, Ohio

Filed Apr. 2, 1981, Ser. No. 250,168
Int. Cl.³ G01N *27/46*
U.S. Cl. 204—1 T **25 Claims**



1. A method for the analysis of a layer of solution adjacent a surface of an electrode, said solution being capable of undergoing an electrochemical oxidation or reduction which alters its absorbance of electromagnetic radiation of at least one wavelength, said method comprising:

passing a beam of electromagnetic radiation at least part of which is of said wavelength across and substantially parallel to said surface;

measuring the radiation diffracted at an angle to said beam by means of radiation measuring means lying outside said beam;

altering the potential of said electrode, thereby causing at least part of said solution to undergo said electrochemical oxidation or reduction;

again passing said beam across and substantially parallel to said surface; and

again measuring said radiation diffracted at an angle to said beam by means of radiation measuring means lying outside said beam.

4,395,313

VACUUM PRETREATMENT PROCESS FOR DURABLE ELECTROPLATED COATINGS ON ABS AND PPO PLASTICS

James H. Lindsay, Fenton; Joseph La Sala, St. Clair Shores, both of Mich., and Hamid M. Ghorashi, Midlothian, Va., assignors to General Motors Corporation, Detroit, Mich.

Filed Jul. 29, 1982, Ser. No. 402,899
Int. Cl.³ C25D *5/54*
U.S. Cl. 204—30 **6 Claims**

1. A method of forming adherent electrodeposited coatings onto a surface of a thermoplastic polymer selected from the class consisting of ABS and PPO comprising the steps of exposing the polymer surface to an RF oxidizing glow discharge equivalent to at least about 3 minutes at a power setting of at least about 50 watts, vacuum depositing onto the so-exposed surface a first thin film of a metal selected from the class consisting of nickel, chromium, titanium, molybdenum, silicon, zirconium, aluminum and alloys thereof to form a blanket metal layer strongly bonded to the so-exposed surface, vacuum depositing a blanket thin film of a readily electroplatable metal strongly bonded to the first thin film, and then electrodepositing an overlayer onto the last-mentioned vacuum deposited thin film, without producing peeling or blistering of the films or the overlayer on them.

4,395,314

PROCESS FOR THE PRODUCING CONCENTRATED SOLUTION OF SODIUM HYDROXIDE AND CHLORINE

Sergei V. Golubkov, ulitsa Menzhinskogo, 21, kv. 420; Ernest A. Druzhinin, ulitsa Gvardeiskaya, 4, kv. 32; Vladimir M. Zimin, 8-ya ulitsa Textilschikov, 10, kv. 18; Vladimir L. Kubasov, Kirovogradskaya ulitsa, 4, korpus 2, kv. 135; Florenty I. Lvovich, 1 Nizhne Mikhailovsky proezd, 16, kv. 55, and Anatoly F. Mazanko, Stavropolskaya ulitsa, 56, korpus 1, kv. 73, all of Moscow, U.S.S.R.

Filed May 3, 1982, Ser. No. 374,205
Claims priority, application U.S.S.R., May 7, 1981, 3291365
Int. Cl.³ C25B *1/34*
U.S. Cl. 204—98 **2 Claims**

1. A process for producing a concentrated solution of sodium hydroxide and chlorine comprising an electrochemical decomposition at a temperature within the range of from 90° to 108° C. of a concentrated solution of sodium chloride with a concentration of from 4.3 to 5.3 mol/l with a degree of decomposition of sodium chloride of 0.9–1.0 and at a rate of flow of the solution of sodium chloride through a filtering diaphragm of from 3 to 5 ml/hr per 1 A of the electrolysis current and the electrolysis products are withdrawn from the process.

4,395,315

RECOVERY OF NICKEL FROM WASTE MATERIALS

Adolfo R. Zambrano, Hibbing, Minn., assignor to The Hanna Mining Company, Cleveland, Ohio

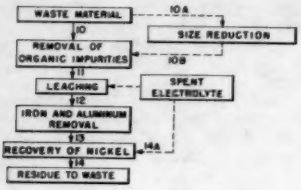
Continuation of Ser. No. 143,781, Apr. 25, 1980, abandoned, which is a continuation-in-part of Ser. No. 44,558, Jun. 1, 1979, abandoned. This application Nov. 18, 1981, Ser. No. 322,631
Int. Cl.³ C25C *1/06*
U.S. Cl. 204—112 **6 Claims**

1. A method for recovering nickel from a waste material consisting essentially of nickel, small amounts of iron and aluminum and organic impurities consisting essentially of the steps of:

(a) removing the organic impurities from the waste material by calcining said waste material at a temperature in the range of about 400° C. to about 500° C.;

(b) leaching the calcined material from step (a) with an acid to provide an acid solution, in which the acid concentration initially is in stoichiometric excess relative to nickel, the leaching being continued in a single step until no significant nickel concentration remains in the residue of the waste material;

(c) precipitating said iron and aluminum from the acid solution by adjusting the pH of said acid solution to about 2.5 to 3.5; and



(d) recovering nickel from the acid solution by electrowinning.

4,395,316

HYDROGEN PRODUCTION BY BIOMASS PRODUCT DEPOLARIZED WATER ELECTROLYSIS

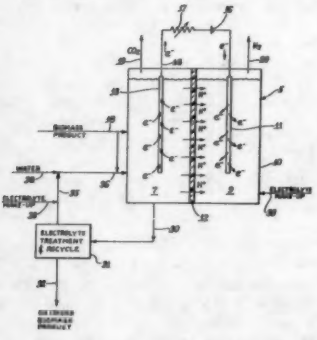
Michael R. St. John, Chicago, Ill., assignor to Institute of Gas Technology, Chicago, Ill.

Continuation-in-part of Ser. No. 234,692, Feb. 17, 1981, Pat. No. 4,341,608. This application Apr. 19, 1982, Ser. No. 369,534

The portion of the term of this patent subsequent to Jul. 27, 1999, has been disclaimed.

Int. Cl.³ C25B *1/04*

U.S. Cl. 204—129 **52 Claims**



1. A process for hydrogen production by biomass product depolarized water electrolysis comprising: maintaining an electrical potential across an anode comprising metal selected from the group consisting of nickel and lead-rich ruthenium polychlore compounds having a formula $Pb_2[Ru_{2-x}Pb_x]O_{7-y}$ wherein x is greater than 0 and less than or equal to about 1.2 and y is greater than or equal to 0 and less than or equal to about 1.0 in a metallic anode zone and a metallic cathode in a cathode zone of an electrolytic cell; oxidizing, in an aqueous electrolyte in said electrolytic cell anode zone, oxidizable biomass product selected from the group consisting of monosaccharides, lignins and mixtures thereof with water producing oxidized biomass product, hydrogen ions and electrons; transporting said hydrogen ions through said electrolyte to said cathode zone; forming molecular hydrogen in said cathode zone.

4,395,317

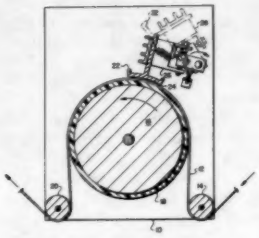
WETTING TENSION TREATING APPARATUS AND METHOD

Darwin L. Whiteside, Rte. 2, Box 85 N., Royse City, Tex. 75089

Filed Jan. 15, 1982, Ser. No. 339,403

Int. Cl.³ B01K *1/00*; H01T *19/04*

U.S. Cl. 204—165 **8 Claims**



1. An apparatus for the treatment of thin sheeting by subjecting said sheeting to a corona discharge, said apparatus comprising:

A first elongated electrode;

A second elongated electrode;

means supporting said first and second elongated electrodes in a relationship defining a gap therebetween; and

means for passing said sheeting through said gap,

said first elongated electrode including an exterior surface disposed near said second elongated electrode, said exterior surface including a plurality of intersecting furrows defining a plurality of mesa structures each having at least one acute angle corner.

4,395,318

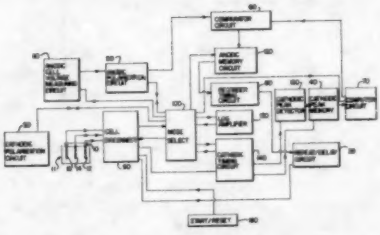
PITTING CORROSION METER

William S. Tait, Racine, Wis.; Richard L. Martin, and Richard A. Rodgers, both of St. Louis, Mo., assignors to Petrolite Corporation, St. Louis, Mo.

Filed Jan. 15, 1982, Ser. No. 339,527

Int. Cl.³ G01N *27/30, 27/46*

U.S. Cl. 204—404 **29 Claims**



1. A pitting corrosion meter comprising:

test electrode means for immersion in a corrodant fluid;

reference electrode means for immersion in said corrodant fluid;

auxiliary electrode means for immersion in said corrodant fluid;

cathodic circuit means for cathodically polarizing said test electrode means with respect to said reference electrode means thereby causing current flow in said auxiliary electrode means;

first monitoring means for monitoring said current flow and storing a peak value of said current flows;

computer circuit means for producing a cathodic polariza-

tion curve and its extrapolation containing said peak value;

anodic circuit means for increasingly anodically polarizing said test electrode means with respect to said reference electrode means to a first predetermined value, and thereafter decreasingly anodically polarizing said test electrode means with respect to said reference electrode means;

second monitoring means for monitoring the anodic current and corresponding potentials of said test electrode means with respect to said reference electrode means during said decreasing anodic polarization of said test electrode means, thereby generating a reverse anodic polarization curve; and

comparator means for determining the point of intersection between said reverse anodic curve and said cathodic curve or its extrapolation.

4,395,319

LEAN SENSOR

Yoshio Torisu; Shigenori Sakurai; Takashi Kamo, and Toshinobu Furutani, all of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Filed May 11, 1982, Ser. No. 377,017

Claims priority, application Japan, May 11, 1981, 56-70440

Int. Cl.³ G01N *27/58*

U.S. Cl. 204—426 **11 Claims**

1. A lean sensor comprising:

a sensor element consisting of a tubular solid electrolyte having opposed sides provided with respective electrodes and at least one electrode thereof coated with a porous coating layer;

an element-fixing plate having a receiving hole to which said sensor element is fitted; and

a pair of heat-resistant and insulating support plates having opposing windows, said element-fixing plate to which said element is fixed being clamped between said support plates such that said sensor element is disposed in said windows.

4,395,320

APPARATUS FOR PRODUCING ELECTRODEPOSITED WIRES

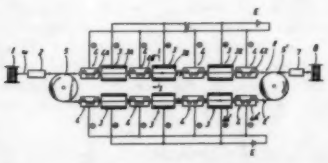
Tatsuji Kasashima, Toyanaka; Shuji Morita, Kobe; Hiroyuki Hayami, Itami; Seiroku Ose, Higashiosaka; Yoshinori Takada, Amagasaki, and Fumihiro Nozaki, Nishinomiya, all of Japan, assignors to Dainichi-Nippon Cables, Ltd., Amagasaki, Japan

Filed Feb. 5, 1981, Ser. No. 231,610

Claims priority, application Japan, Feb. 12, 1980, 55-16293

Int. Cl.³ C25D *17/00*

U.S. Cl. 204—206 **5 Claims**



1. An apparatus for electroplating a wire to provide the wire with an electrolytic plating layer, comprising: a plurality of electroplating stations arranged in a row, each electroplating station comprising an electrolytic bath (3) for coating the wire with an electrolytic plating layer, drive means (5, 5') for passing the wire through the electrolytic baths (3) in a given travel direction, and a plurality of smoothing stations (4) each comprising means (411, 412, 413, 414) for smoothing the surface of the wire substantially over the entire periphery thereof, said smoothing stations being arranged so that at least one smoothing station is located downstream of each electroplating station (3) as viewed in said travel direction, whereby said smoothing stations and said electroplating stations are arranged in alternate sequence with each other for achieving a smooth-surfaced compact electrolytic plating layer, said surface smoothing means (411, 412, 413, 414) comprising at least four rotatable rollers arranged along and adjacent to the wire in each smoothing station, said rollers being spaced apart from one another and so positioned that substantially the entire periphery of the wire is contacted as it passes through each smoothing station, each of said rollers having a circumferential groove with a rounded groove bottom in its peripheral surface to abut on the outer peripheral surface of the wire in a compressive manner so that the surface of the wire is brought into compressing contact with the rollers each of said rotatable rollers having a rotational axis extending substantially perpendicularly to the travel direction of the wire.

4,395,321

SEPARATOR ELECTROLYTIC CELL

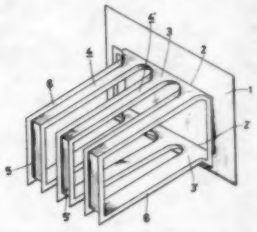
Tokuzo Iijima, Kobe; Yasushi Samejima, Kakogawa; Kazuo Kishimoto, Takasago, and Kimihiko Kono, Kobe, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Jul. 17, 1981, Ser. No. 284,517

Claims priority, application Japan, Jul. 17, 1980, 55-98453

Int. Cl.³ C25B *9/00*

U.S. Cl. 204—252 **11 Claims**



1. An electrolytic cell for the production of an aqueous alkali metal hydroxide liquor by the electrolysis of an aqueous alkali metal halide solution, wherein the cell is partitioned by a glove-shaped finger comprising two finger-shaped supports having fingers and extending parallel toward the inside of the cell from the opposite inner peripheries of a releasable plate secured to an inner wall of the cell by one releasable wall plate and a separator positioned adjacent to the fingers, said glove-shaped finger separating the cell into a first electrode compartment including said wall plate and a second electrode compartment including remainder walls of the cell, the first electrode compartment comprising at least one anode or cathode inserted in the glove-shaped finger and mounted on the releasable wall plate, and the second electrode compartment comprising opposite polar electrodes arranged along the outer surface of the separator of the glove-shaped finger.

4,395,322

CATALYTIC ELECTRODE

Lawrence A. Harris, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Nov. 18, 1981, Ser. No. 322,482

Int. Cl.³ C25B *11/00*

U.S. Cl. 204—290 F **12 Claims**

1. A catalytic electrode consisting essentially of a supporting electrical conductor carrying an adherent catalytic metal in a thickness of at least about 10 Angstroms and in at least a catalytic amount on a predetermined surface thereof, said electrical conductor being selected from the group consisting of silicon, titanium, tantalum, and niobium, and said catalytic metal being

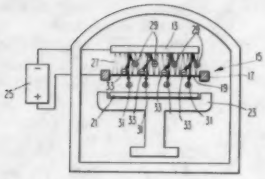
selected from the group consisting of platinum, palladium, nickel, rhodium, and iridium.

4,395,323

APPARATUS FOR IMPROVING A SPUTTERING PROCESS

Richard A. Denton, Marlton, and Bawa Singh, Cherry Hill, both of N.J., assignors to Denton Vacuum Inc., Cherry Hill, N.J.

Filed Apr. 17, 1981, Ser. No. 257,314
Int. Cl.³ C23C *15/00*
U.S. Cl. 204—298 **6 Claims**



1. In a sputtering device, the combination of: vacuum chamber means adapted to be in a substantial state of vacuum; planar cathode means disposed within said vacuum chamber means and comprising a material to be deposited on a substrate; electrical conducting means formed into a mesh like structure whereby said mesh like structure forms a mesh anode means; said mesh anode means disposed wihtin said vacuum chamber means in close proximity to said cathode means; electrical voltage generating means connected to both said cathode means and mesh anode means to provide a sufficient voltage difference therebetween to cause a gaseous glow discharge between said cathode means and said anode means; and substrate holding means characterized by being electrically floating and located in said vacuum chamber means on the side of said mesh anode means away from said cathode means and out of the gaseous glow discharge between said cathode and anode, whereby when said gaseous glow discharge is in effect, particles of cathode material are dislodged therefrom and pass through said mesh anode means to be deposited on said substrate means and whereby a majority of the electrons resulting from said gaseous glow discharge are intercepted by said mesh anode means.

4,395,324

THERMAL CRACKING WITH HYDROGEN DONOR DILUENT

Francis J. Derbyshire, Ewing; Philip Varghese, Trenton, and Darrell D. Whitehurst, Titusville, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Nov. 2, 1981, Ser. No. 317,036
Int. Cl.³ C10G *47/34*
U.S. Cl. 208—56 **13 Claims**

8. An improved hydrogen donor diluent cracking process for hydro-treating heavy hydrocarbon charge stock comprising the steps of

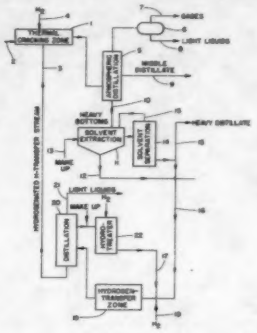
(a) contacting the hydrocarbon charge stock in the substantial absence of cracking catalyst with a hydrogen donor containing hydrogenated condensed ring aromatic compounds under hydrogen pressure and thermal cracking conditions at a temperature of about 650° F. to 900° F.;

(b) distilling the cracking product of step (a) to separate a fraction boiling above about 600° F.;

(c) extracting from said fraction a heavy aromatic portion by contacting said fraction with liquid hydrocarbon naphtha containing about 10 percent to 50 percent by weight of aromatic compounds, wherein said naphtha comprises a mixture of hydrocarbon boiling between about 85° F. and 430° F.;

(d) reacting extracted heavy aromatic portion from step (c) with at least one lower boiling hydrogenated condensed ring aromatic compound under hydrogen transfer conditions;

(e) separating hydrogenated heavy aromatic portion from the reaction product of step (d); and



(f) recycling hydrogenated heavy aromatic portion from separation step (e) to cracking step (a).

4,395,325

REDUCING SULFUR TRIOXIDE CONCENTRATION IN REGENERATION ZONE FLUE GAS

Stephen J. McGovern, Deptford; Peter J. Owens, West Deptford, and Michael J. Dolan, Laurel Springs, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Sep. 1, 1981, Ser. No. 298,404
Int. Cl.³ C10G *11/18*; B01J *37/14*
U.S. Cl. 208—113 **9 Claims**

1. In a catalytic cracking process comprising:

contacting a hydrocarbonaceous feed with a cracking catalyst to produce cracked hydrocarbon vapors and deactivated catalyst containing carbonaceous deposits;

separating the deactivated catalyst from the hydrocarbon vapors and conducting the deactivated catalyst to a regeneration vessel;

at least partially removing the carbonaceous deposits from the deactivated catalyst in the regeneration vessel by means of an oxygen-containing gas introduced into the regeneration vessel, thereby forming a flue gas comprising oxygen, sulfur dioxide, sulfur trioxide, carbon monoxide and carbon dioxide;

the improvement which comprises monitoring the sulfur trioxide and the oxygen concentration in the flue gas from the regeneration vessel; and

adjusting the amount of the oxygen-containing gas in the regeneration vessel in relation to the concentration of the sulfur trioxide to maintain the concentration by volume of the sulfur trioxide in the flue gas such that the ratio SO_3/SO_x in the flue gas is less than 5%, thereby preventing the appearance of a visible condensation plume in the flue gas.

4,395,326

TREATMENT OF COAL TAR EMULSIONS

Samuel Cukier, 27 Newgate Rd., Toronto, Ontario, Canada (M6B 3G5)

Continuation-in-part of Ser. No. 202,363, Oct. 29, 1980, abandoned. This application Jan. 25, 1982, Ser. No. 342,210
Int. Cl.³ C10G *33/04*
U.S. Cl. 208—188 **12 Claims**

1. A process for treating a stable emulsion of coal tar material containing water and quinoline insolubles, comprising mixing a surface active composition with said material, so as to facilitate the segregation of at least a portion of at least one of said water and said quinoline insolubles from said mixture,

where said surface active composition is chosen from the class of compounds having the general formula $CH_3(CH_2)_xCH_2(OCH_2CH_2)_yOSO_3^-M^+$ where the average value of x is in the range 6.5 to 13, y is at least 1.5, and M^+ represents one of sodium and ammonium ions.

4,395,327

HYDROTREATING PROCESS

Bruce P. Pelrine, Lawrenceville, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Aug. 17, 1982, Ser. No. 408,953
Int. Cl.³ C10G *45/12*
U.S. Cl. 208—216 R **6 Claims**

1. A process for producing a lubricating oil of improved properties which comprises hydrotreating a lubricating oil base stock in the presence of a hydrotreating catalyst comprising zeolite ZSM-39.

4,395,328

CATALYST AND SUPPORT, THEIR METHODS OF PREPARATION, AND PROCESSES EMPLOYING SAME

Albert L. Hensley, Jr., Munster, Ind., and Leonard M. Quick, Naperville, Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Jun. 17, 1981, Ser. No. 274,553
Int. Cl.³ C10G *45/04, 45/08, 45/26;* B01J *27/18*
U.S. Cl. 208—251 H **13 Claims**

1. A process for the conversion of a hydrocarbon stream, which process comprises contacting said stream under suitable conditions and in the presence of hydrogen with a catalyst comprising a hydrogenating component comprising at least one hydrogenating metal and a large-pore, high-surface area support comprising an alumina and one or more oxides of phosphorus, said at least one hydrogenating metal being present in the elemental form, as the oxide, as the sulfide, or mixtures thereof, said catalyst having been prepared by forming a composite comprising alumina and one or more oxides of phosphorus into a shaped catalyst support material having a selected shape and at least 0.8 cc/gm of its pore volume in pores having diameters of 0 nm (0 Å) to 120 nm (1,200 Å) and at least 0.1 cc/gm of its pore volume in pores having diameters of 120 nm (1,200 Å) to 5,000 nm (50,000 Å), heating said shaped catalyst support material in the presence of steam at sufficient elevated temperature, steam pressure, and time period to increase the average pore diameter of said shaped catalyst support material in the absence of any appreciable reduction in pore volume so as to provide a steam-treated support material having an average pore diameter of at least 18 nm (180 Å) and a surface area below 200 m^2/gm, and subsequently impregnating said steam-treated support material with said at least one hydrogenating metal.

4,395,329

CATALYST AND PROCESS FOR HYDROREFINING HYDROCARBON CHARGES WITH HIGH CONTENTS OF METALS, RESINS AND/OR ASPHALTENES

Jean-François Le Page, Rueil Malmaison; Alain Billon, Orlienas, and Yves Jacquin, Sevres, all of France, assignors to Societe Francaise des Produits pour Catalyse, Rueil-Malmaison, France

Filed Jul. 2, 1981, Ser. No. 279,637
Claims priority, application France, Jul. 2, 1980, 80 14787
Int. Cl.³ C10G *45/08, 45/60;* B01J *21/10, 27/18*
U.S. Cl. 208—251 H **26 Claims**

1. A process for hydrodemetallizing a hydrocarbon charge of high metal content, comprising passing said charge, in the presence of hydrogen, in contact with a catalyst comprising (a) alumina, (b) at least one metal from group VI and (c) at least one metal from the iron group; wherein said catalyst has all of the following characteristics:

specific surface: 120 to 200 m^2/g

total pore volume (V_T): 0.8 to 1.2 cc/g

% of V_T in pores of a diameter lower than 100 Å: 0–10

% of V_T in pores of a diameter from 100 to 600 Å: 35–60

% of V_T in pores of a diameter greater than 600 Å: 35–55

% of V_T in pores of a diameter greater than 10,000 Å: 10–25.

4,395,330

PROCESS FOR SOLVENT DEASPHALTING OF RESIDUAL HYDROCARBON OILS

Pierre Auboir; Pierre Bonnefond, both of Rueil-Malmaison, and Larry Mank, Orgeval, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Nov. 27, 1981, Ser. No. 325,254
Claims priority, application France, Nov. 28, 1980, 80 25405
Int. Cl.³ C10C *3/00, 3/08*
U.S. Cl. 208—309 **8 Claims**

1. In a process for solvent deasphalting an asphaltene-containing residual hydrocarbon oil, wherein the residual oil is contacted with a light hydrocarbon solvent, in an extraction zone, deasphalting conditions are maintained to allow the formation of a liquid solvent-deasphalted oil phase and a fluid solvent-asphalt phase, the two resultant phases are separated and the solvent is separately vaporized from each of the two phases, so as to separately obtain a deasphalted oil and an asphaltic residue, the improvement comprising:

a. passing a portion of the deasphalted oil, substantially freed of solvent, through a zone of indirect heating by flame, so as to raise its temperature;

b. contacting the reheated deasphalted oil from step (a), in indirect heat exchange relation, with the fluid solvent-asphalt phase, so as to deliver to said phase at least a part of the heat necessaary to vaporize the solvent therein; and

c. admixing the deasphalted oil, after the heat exchanger of step (b), with the liquid solvent-deasphalted oil phase recovered from the extraction zone.

4,395,331

APPARATUS FOR PRESSING LIQUID OUT OF MATERIAL CONTAINING LIQUID

Harald Andersson, Säffle, Sweden, assignor to AB Saffle Gjuteri and Mekaniska Verkstad, Saffle, Sweden

Continuation of Ser. No. 154,400, Jul. 9, 1979, abandoned. This application Feb. 26, 1982, Ser. No. 352,866
Int. Cl.³ B01D *33/04*
U.S. Cl. 210—329 **12 Claims**

1. Apparatus for pressing liquid out of liquid-containing material, said apparatus comprising

(a) dewatering means for dewatering said material, said dewatering means including at least one pair of converging, endless, vertically disposed filter members each including

(i) a back and a front braking roller each roller having a vertical axis,

(ii) a perforated support base,

(iii) a filter supported on said support base,

(iv) drive means for driving said filter at a variable speed around said braking rollers, and

(v) adjustment means for rendering at least one of said filter members variably adjustable to vary the pressing angle between that filter member and the other filter member of the pair,

(b) a horizontally disposed screw feeder means for feeding

said material in an axial, horizontal direction towards said dewatering means, and

(c) toothed worm wheel means for preventing material from retreating into the thread of said screw feeder means as a result of high flow resistance in the dewatering means by maintaining at least one tooth of said toothed worm wheel means in sealing engagement with said screw feeder means in the thread thereof.

4,395,332

ADSORPTION AND FILTRATION MAT FOR LIQUIDS

Max Klein, 257 Riveredge Rd., Tinton Falls, N.J. 07724, assignor to Max Klein and Frederick G. Crane, Jr., both of Dalton, Mass.

Continuation of Ser. No. 66,085, Aug. 13, 1979, abandoned, which is a continuation-in-part of Ser. No. 922,656, Jul. 7, 1978, abandoned. This application Apr. 28, 1981, Ser. No. 258,443

Int. Cl.³ B01D *39/08*

U.S. Cl. 210—496 **18 Claims**

1. A filter mat for removing particulate, colloidal or dissolved substances from a liquid containing same, said mat being in the form of a non-woven matrix consisting essentially of

(i) from 10 to 95 weight percent of randomly arranged, irregularly intersecting and overlapping cellulose fibers,

(ii) from 2 to 90 weight percent of polymer micro-bits produced from an expanded, thermoplastic polymer selected from the group of (a) a styrene-polymer, (b) a lower polyolefin, which is the polymer of an ethylenically unsaturated hydrocarbon monomer having from 2 to 6 carbon atoms, (c) a melt alloy of polyethylene with up to about 10 percent by weight of polystyrene, (d) a copolymer of propylene with from about 20 to about 30 percent by weight of ethylene, (e) a melt alloy composed of at least 50 percent by weight of polypropylene and the balance being a copolymer of ethylene with up to about 30 percent of said copolymer being vinyl acetate, and (f) a flexible foamed polyurethane, each said polymer being non-brittle in expanded form, said polymer micro-bits being substantially completely free of intact cells of the expanded polymer from which they are produced; and at least one of the following:

(iii) from about 1 to 10 weight percent of polyethylene terephthalate fibers; or

(iv) an adsorbing agent selected from the group of:

(a″) finely divided activated carbon in an amount of 70 weight percent or less;

(b″) diatomaceous earth in an amount below that at which undesirable dusting of diatomaceous earth from the mat can occur; and

(c″) colloidal alumina monohydrate in an amount sufficient for removing from an aqueous medium a significant portion of any chromic acid, dissolved dichromates and chromic salts contained in said medium, or a combination of two or more of said adsorbing agents.

4,395,333

PRE-WET AND REINFORCED MOLTEN METAL FILTER

Daniel E. Groteke, 1228 Ridge Cliff Rd., Cincinnati, Ohio 45215

Filed Apr. 14, 1982, Ser. No. 368,107

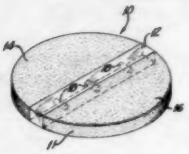
Int. Cl.³ B01D *39/14, 37/02*

U.S. Cl. 210—510 **13 Claims**

1. A filter element for insertion into a filtering vessel for filtering molten metal the filter element having reduced start-up time and reduced damage caused as a result of thermal shock, the filter element, comprising:

a porous ceramic body with interconnected pores throughout, said body having a central region bounded by a peripheral edge region;

a refractory cement filling said pores in said peripheral edge region; and



a metal alloy filling the pores of said central region of said porous ceramic body to thereby reduce start-up time and damage to the filter element.

4,395,334

TREATMENT OF WASTE WATER IN NON-EVAPORATING DEHYDRATION OF LOW GRADE COAL

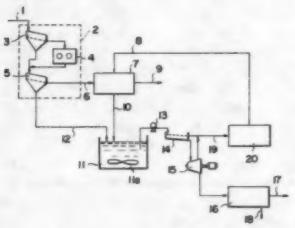
Yasuyuki Nakabayashi, Yokohama; Yoshio Matsuura, Funabashi; Michio Kurihara, Mitaka; Takao Kamei, Ashiya; Akira Nakamura, Akashi; Keiichi Komai, Akashi; Akira Shimotamari, Akashi, and Takeshi Wakabayashi, Kobe, all of Japan, assignors to Electric Power Development Co. Ltd. and Kawasaki Jukogyo Kabushiki Kaisha, both of Tokyo, Japan

Filed Mar. 29, 1982, Ser. No. 362,605

Claims priority, application Japan, Mar. 31, 1981, 56-48951

Int. Cl.³ B01D *15/00*; **F26B** *7/00*

U.S. Cl. 210—631 **10 Claims**



1. A method for dehydrating porous low grade coal comprising the steps of: classifying the coal into lumps and fine particles, subjecting the lumps of coal to a non-evaporating dehydration under steam and hot water to produce dehydrated coal and waste water, bringing the waste water into contact with the fine particles of coal so that such components in the waste water that cause an increase in COD value of the waste water are absorbed by the coal particles, then subjecting the waste water to a solid-liquid separation to thereby remove fine particles of coal contained in the waste water, and burning the fine particles of coal to produce stream for carrying out the non-evaporating dehydration, and recycling said steam to the non-evaporating dehydration step.

4,395,335

REPRODUCTION METHOD OF FILTER DEMINERALIZER IN CONDENSATE CLEANUP SYSTEM OF REACTOR

Toru Saito, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 28, 1979, Ser. No. 16,162

Claims priority, application Japan, Mar. 8, 1978, 53-25403

Int. Cl.³ B01D *15/04*

U.S. Cl. 210—675 **3 Claims**

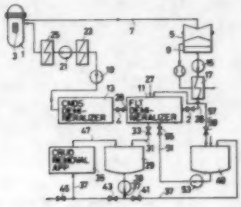
1. A method of reproduction of a filter demineralizer in a

nuclear reactor condensation cleanup system, comprising the steps of

backwashing the filter demineralizer to separate therefrom ion-exchange resin precoated on the filter demineralizer contaminated with crud;

removing the crud from the ion-exchange resin thereby to reproduce the ion-exchange resin; and

precoating new ion-exchange resin to form a new ion-exchange resin layer on the filter demineralizer and depositing at least a part of the reproduced ion-exchange resin on the new ion-exchange resin layer to form a reproduced ion-exchange resin layer so that a condensate to be treated will flow from the reproduced ion-exchange resin layer to the new ion-exchange resin layer on the filter demineralizer; the amount of the new ion-exchange resin precoated being nearly equal to the reproduced ion-exchange resin precoated by weight.



4,395,336

METHOD OF ABSORBING LIQUIDS

Kjell Eng, Mullsjö, Sweden, assignor to AB Eiser, Boras, Sweden

Division of Ser. No. 117,977, Feb. 4, 1980, abandoned. This application Sep. 2, 1982, Ser. No. 414,316

Claims priority, application Sweden, Feb. 16, 1979, 7901400

Int. Cl.³ B01D *15/00*

U.S. Cl. 210—693 **12 Claims**

1. The method of picking up petroleum spills comprising the steps of placing a blanket made of an improved liquid-absorbing textile product of a double-layer fabric comprising pile threads of a hydrophobic and oleophilic synthetic material, said pile threads interconnecting the two layers of said double-layer fabric in contact with the spill for absorption of the petroleum into said blanket and removing the blanket and adsorbed petroleum.

4,395,337

TREATMENT OF BRACKISH WATER

Edmund J. Ciepiela, Willowdale, Canada, assignor to Francis Hankin & Co. Limited, Scarborough, Canada

Filed Jun. 26, 1981, Ser. No. 277,648

Claims priority, application United Kingdom, Jul. 1, 1980, 8021481

Int. Cl.³ C02F *1/46*

U.S. Cl. 210—703 **8 Claims**

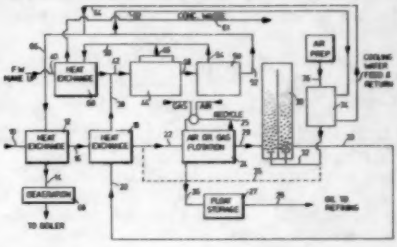
1. A method of treating hydrocarbon- and mineral-contaminated brackish water from the steam extraction of a heavy oil from a subterranean deposit thereof to render the same susceptible of reuse in steam regeneration, which comprises:

(a) removing hydrocarbon contamination from the brackish water by:

(i) causing a substantial proportion of said hydrocarbon contamination to separate from the brackish water as a substantially continuous phase,

(ii) separating the continuous phase from the hydrocarbon contamination-depleted brackish water, and

(iii) oxidizing any residual hydrocarbon contamination in the hydrocarbon contamination-depleted brackish water; and



(b) subsequently removing mineral contamination from the brackish water by subjecting hydrocarbon contamination-free brackish water to reverse electrolysis to remove all mineral contaminants therefrom except for silica and removing silica from the electrodialyzed aqueous phase, thereby to form decontaminated water suitable for boiling to form steam.

4,395,338

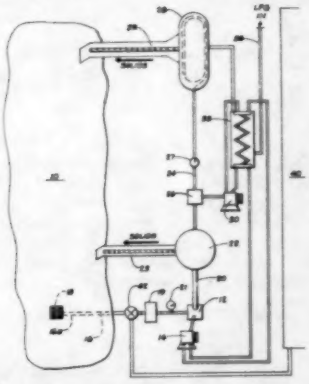
METHOD AND SYSTEM FOR DEWATERING RESERVE PITS

Billy L. Rowton, Rte. 3, Box 65, Marlow, Okla. 73055

Filed Apr. 12, 1982, Ser. No. 367,415

Int. Cl.³ C02F *1/04*; E21B *21/06*

U.S. Cl. 210—747 **3 Claims**



1. A method of dewatering a reserve pit of the type used in drilling oil and gas wells comprising:

pumping water and entrained solids from the pit to a holding tank;

straining solid particles from the material pumped from the pit before the material reaches the holding tank;

settling out solids from the liquid and solids pumped into the holding tank;

pumping liquid from the holding tank to a boiler;

boiling away liquid pumped into the boiler from the holding tank;

returning to the reserve pit all solids separated from the material pumped from the reserve pit; and then

filling the reserve pit with earth.

4,395,339

METHOD OF OPERATING PURE OXYGEN WET OXIDATION SYSTEMS

Ajit K. Chowdhury, Schofield; Gerald L. Bauer, Rothschild, and Richard W. Lehmann, Rib Mountain, all of Wis., assignors to Sterling Drug Inc., New York, N.Y.

Filed Apr. 1, 1982, Ser. No. 364,536

Int. Cl.³ C02F *1/74, 11/08*

U.S. Cl. 210—761 **8 Claims**

1. A method for startup, operation and shutdown of a wet oxidation apparatus which uses a flow of pure oxygen for oxidizing combustible substances, said apparatus including a reactor, valved means for introducing water and combustible substance into said reactor, valved means for introducing a flow of pure oxygen into said reactor, valved means for passing gaseous and liquid combustion products from said reactor, valved means for introducing a stream of purge water into oxygen introducing means, valved means for introducing cleaning solution into said oxygen introducing means, and valved means for purging said reactor with an inert diluent gas, said method comprising the steps of:

initiating a potential for oxidation in said reactor prior to starting the flow of oxygen to said reactor, and maintaining the potential for oxidation until the flow of oxygen is stopped; starting a continuous purge of inert diluent gas into said reactor prior to starting the flow of oxygen, and continuing the addition or in situ generation of inert gas in the reactor until after the flow of oxygen is stopped; and cleaning the portion of the oxygen introducing means within said reactor with a cleaning solution and subsequently introducing a stream of purge water into oxygen introduction means prior to starting the flow of oxygen to said reactor, and continuing the flow of said purge water until after said flow of oxygen is stopped.

4,395,340

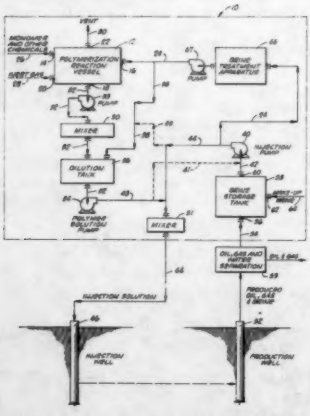
ENHANCED OIL RECOVERY METHODS AND SYSTEMS

Homer C. McLaughlin, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Jul. 14, 1981, Ser. No. 282,989

Int. Cl.³ C09K *3/00*

U.S. Cl. 252—8.55 D **10 Claims**



1. A method of enhancing the recovery of oil from a subterranean oil-containing formation comprising injecting a viscous aqueous solution containing one or more water-soluble organic polymers into the formation by way of at least one injection well penetrating the formation and forced through the formation towards at least one production well penetrating the formation, and further comprising

combining water-soluble polymerizable vinyl monomers and a water-soluble ionizing sulfite with an aqueous inorganic salt solution at the site of said injection and production wells whereby said monomers are rapidly polymerized to form a concentrated high viscosity polymer solution, said water-soluble polymerizable vinyl monomers being selected from the group consisting of acrylamide monomers alone, and acrylamide monomers and one or more other vinyl monomers which are copolymerizable therewith;

diluting said concentrated high viscosity polymer solution with additional aqueous fluid at the site of said injection and production wells to form an injection solution having a desired viscosity; and

injecting said injection solution into said formation.

4,395,341

USE OF METRONIDAZOLE IN OIL RECOVERY

Robert D. Muir, Glenview, Ill., assignor to G. D. Searle & Co., Skokie, Ill.

Continuation of Ser. No. 814,969, Jul. 21, 1977, abandoned. This application Sep. 8, 1981, Ser. No. 300,092

Int. Cl.³ E21B *43/22*

U.S. Cl. 252—8.55 D **5 Claims**

1. In a process of oil recovery characterized by the steps of injecting flooding water into oil-bearing subterranean formations to displace portions of the residual oil therein the improvement comprising using flooding water containing an effective antibacterial amount of metronidazole.

4,395,342

GRANULAR FABRIC SOFTENING COMPOSITION

Daniel L. Strauss, Mason, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

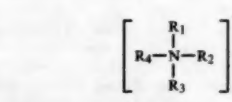
Continuation-in-part of Ser. No. 156,995, Jun. 6, 1980, abandoned. This application May 21, 1981, Ser. No. 265,757

Int. Cl.³ D06M *13/46*

U.S. Cl. 252—8.75 **11 Claims**

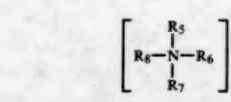
1. A comelted, solid, granular fabric softening composition comprising:

A. 60% to 85% of a first compound having the formula:



wherein R_1 and R_2 are lower alkyl moieties, R_3 and R_4 are each higher alkyl or alkenyl moieties having from about 14 to about 22 carbon atoms, and X is an anion; and

B. 15% to 40% of a second compound having the formula:



wherein R_5, R_6 and R_7 are each lower alkyl moieties, R_8 is an alkyl or alkenyl moiety having from about 10 to about 14 carbon atoms, and Y is an anion;

wherein the softening effect of said solid, granular composition is improved with, improved rinse water dispersibility.

4,395,343

ANTIOXIDANT COMBINATIONS OF SULFUR CONTAINING MOLYBDENUM COMPLEXES AND ORGANIC SULFUR COMPOUNDS

Louis de Vries, Greenbrae, and John M. King, San Rafael, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Aug. 7, 1981, Ser. No. 290,915
The portion of the term of this patent subsequent to Jan. 18, 2000, has been disclaimed.
Int. Cl.³ C10M 1/20, 1/32, 1/38, 1/54
U.S. Cl. 252—32.7 E 16 Claims

1. A lubricating oil additive comprising a combination of
(a) an oil soluble sulfur containing molybdenum complex prepared by (1) reacting an acidic molybdenum compound and a basic nitrogen compound selected from the group consisting of a succinimide, carboxylic acid amide, Mannich base, phosphoramide, thiophosphonamide, phosphonamide, dispersant viscosity index improvers, or mixtures thereof to form a molybdenum complex wherein from 0.01 to 2 atoms of molybdenum are present per basic nitrogen atom, and (2) reacting said complex with carbon disulfide in an amount to provide 0.1 to 4 atoms of sulfur per atom of molybdenum, and
(b) an oil soluble organic sulfur compound or mixtures thereof wherein the organic sulfur compound of component (b) is present in an amount of from 0.02 to 10 parts by weight per part by weight of the sulfur containing molybdenum complex of component (a).

4,395,344

DRAIN OPENER COMPOSITION

Lodric L. Maddox, Oakland, Calif., assignor to The Clorox Company, Oakland, Calif.

Continuation of Ser. No. 361,882, May 21, 1973, abandoned. This application Jul. 29, 1976, Ser. No. 709,652
Int. Cl.³ C11D 7/54
U.S. Cl. 252—99 17 Claims

1. A drain opener composition that provides improved mixing with liquids trapped within a plugged drain, comprising a strong caustic in an amount of greater than about 50% by weight of the composition, aluminum metal in an effective amount for producing hydrogen gas in the presence of said caustic and for causing a mixing action, said effective amount of aluminum metal comprising less than about 5% by weight of the composition, a peroxy compound suitable for the process of generating oxygen gas over an extended period of time in an effective amount for generating oxygen gas to produce a strong mixing action, said amount of said peroxy compound comprising less than about 10% by weight of composition, a heavy metal salt catalyst in an amount sufficient for promoting the evolution of oxygen from said peroxy compound in the presence of water and the strong caustic, a surfactant which is stable in a highly caustic environment, and a water soluble potassium salt other than said surfactant, said potassium salt producing potassium ions in water solution, said ions upon contact with saponified fats and greases in said drain producing soft, highly soluble soaps which easily dissolve in drain water.

4,395,345

FREE-FLOWING PHOSPHATE/SILICATE COGRANULATES CONTAINING HYDROPHOBING SUBSTANCE(S)

Kurt Walz, Glinde; Peter Dittmann, Oftersheim, and Hartmut Höhne, Pfungstadt, all of Fed. Rep. of Germany, assignors to Lever Brothers Company, New York, N.Y.

Filed Oct. 8, 1981, Ser. No. 309,757
Claims priority, application Fed. Rep. of Germany, Oct. 10, 1980, 3038413
Int. Cl.³ C11D 3/04, 3/08
U.S. Cl. 252—135 4 Claims

1. Cogranulates of alkalimetal tripolyphosphates and alkalimetal silicates with improved dispensability, said cogranulates comprising from 5 to 60 percent by weight of the alkalimetal tripolyphosphates, from 95 to 40 percent by weight of the alkalimetal silicates, and from 0.05 to 5 percent by weight of a hydrophobing substance, selected from the group consisting of paraffins, silicones, insoluble fatty acid salts and zeolites.

4,395,346

METHOD FOR CLEANING CONTACT LENSES

Frederick D. Kleist, Laguna Hills, Calif., assignor to Allergan Pharmaceuticals, Inc., Irvine, Calif.

Continuation-in-part of Ser. No. 176,077, Aug. 7, 1980, abandoned, which is a continuation-in-part of Ser. No. 3,294, Jan. 15, 1979, abandoned. This application Nov. 18, 1981, Ser. No. 322,616
Int. Cl.³ C11D 3/06, 7/16
U.S. Cl. 252—135 12 Claims

1. A method for the treatment of contact lenses to remove inorganic deposits on the lenses comprising contacting a contact lens having inorganic deposits with an aqueous solution containing an amount effective for removing inorganic deposits of a sequestering agent selected from the group consisting of hexametaphosphate, gluconic acid and salts thereof for a period of time sufficient to remove inorganic deposits.

4,395,347

POWDERED CARPET CLEANER CONTAINING ETHER ALCOHOL SOLVENTS

James H. McLaughlin, Vero Beach, Fla.; Stephen V. Deute, Lodi, N.J.; Robert Carmello, Dumont, N.J., and James A. Smith, Old Tappan, N.J., assignors to Airwick Industries, Inc., Carlstadt, N.J.

Continuation of Ser. No. 100,175, Dec. 4, 1979, abandoned. This application Apr. 28, 1981, Ser. No. 258,481
Int. Cl.³ C11D 3/02, 7/04
U.S. Cl. 252—139 26 Claims

1. A powdered carpet cleaning composition comprising a blend of from about 40.0 to 98.5%, by weight, of a borax carrier and a primary cleaning system comprising from about 1.0 to 10.0%, by weight, of an ether alcohol cleaning solvent and from about 0.5 to 10.0%, by weight, of a surfactant, substantially all of the particles of said composition being between 0.06 to 0.44 millimeters, all percentages based on the total composition weight.

4,395,348

PHOTORESIST STRIPPING COMPOSITION AND METHOD

Wai M. Lee, Milpitas, Calif., assignor to EKC Technology, Inc., Hayward, Calif.

Filed Nov. 23, 1981, Ser. No. 323,724
Int. Cl.³ C11D 7/26, 7/34
U.S. Cl. 252—143 10 Claims

1. A composition for the removal of an organic photoresist from a substrate, which consists essentially of:
an organic sulfonic acid and
1,2 dihydroxybenzene in sufficient amounts to remove the photoresist from the substrate.

4,395,349

VULCANIZATION ACCELERATOR FOR CHLOROPRENE RUBBER

Koji Kinoshita, Takarazuka, Japan, assignor to Osaka Yuki Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed May 18, 1981, Ser. No. 264,549
Claims priority, application Japan, Jun. 11, 1980, 55/77880; Jan. 27, 1981, 56/9582
Int. Cl.³ C09K 3/00; C08K 9/12; C07C 149/22
U.S. Cl. 252—182 10 Claims

1. A vulcanization accelerator composition for chloroprene rubber comprising an inorganic powder impregnated with a thioglycolic acid ester.

4,395,350

LIQUID CRYSTAL MIXTURES

Arthur Boller, Binningen; Alfred Germann, Basel; Martin Schadt, Seltisberg, and Alois Villiger, Basel, all of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

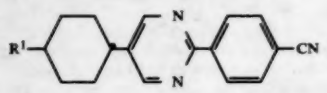
Filed Jul. 1, 1981, Ser. No. 279,493

Claims priority, application Switzerland, Jul. 10, 1980, 5299/80; May 7, 1981, 2966/81

Int. Cl.³ C09K 3/34; G02F 1/13

U.S. Cl. 252—299.1 20 Claims

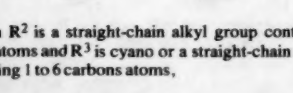
1. A coloring substance-containing liquid crystal mixture which comprises about 5 to about 40 weight % of one or more trans-p-[5-(4-alkylcyclohexyl)-2-pyrimidinyl]benzonitriles of the formula



I

wherein R^1 is a straight-chain alkyl group containing 2 to 7 carbon atoms,

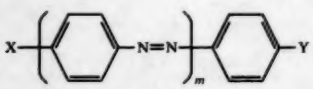
about 10 to about 60 weight % of one or more trans-4-alkylcyclohexane carboxylic acid phenyl ester of the formula



II

wherein R^2 is a straight-chain alkyl group containing 2 to 6 carbon atoms and R^3 is cyano or a straight-chain alkoxy group containing 1 to 6 carbons atoms,

and about 0.1 to about 15 weight % of one or more coloring substances of the formula



XII

wherein m is the integer 1 and X is alkoxy and Y is nitro, or m is the integer 1 or 2, and X is p-alkoxyphenyl and Y is nitro or dialkylamino, or X is alkoxy and Y is p-nitrophenyl or p-(dialkylamino)phenyl; or m is the integer 2, and X is alkoxy and Y is alkoxy, nitro or dialkylamino, or both X and Y are dialkylamino groups; and wherein the alkoxy denotes a straight-chain alkoxy group containing 1 to 12 carbon atoms and the alkyl groups in the dialkylamino each denote a straight-chain alkyl group containing 1 to 4 carbon atoms.

4,395,351

POLYETHER-BASED THICKENERS WITH ADDITIVES FOR INCREASED EFFICIENCY IN AQUEOUS SYSTEMS

Ronald L. Camp, 14029 Cranbrook, Riverview, Mich. 48182

Continuation of Ser. No. 86,836, Oct. 22, 1979, Pat. No. 4,310,436. This application Apr. 8, 1981, Ser. No. 252,165

The portion of the term of this patent subsequent to Jan. 12, 1999, has been disclaimed.

Int. Cl.³ B01J 13/00

U.S. Cl. 252—315.1 20 Claims

10. The process of thickening an aqueous system comprising the addition of an effective thickening amount of a polyether-based thickening agent to said aqueous system, said polyether-based thickening agent comprising in admixture:

A. a polyether having a molecular weight of about 1000 to about 25,000, which is selected from the group consisting of

(1) polyethers prepared by reacting a mixture of ethylene oxide and at least one lower alkylene oxide having 3 to 4 carbon atoms with at least one active hydrogen-containing aliphatic or alkylaromatic compound containing no more than one active hydrogen and about 12 to about 18 carbon atoms and at least one glycidyl ether having a carbon chain length of about 12 to about 18 aliphatic carbon atoms and wherein said glycidyl ether is present in the amount of about 1 to about 20 percent by weight based upon the total weight of said polyether,

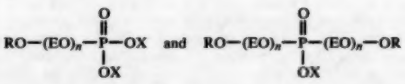
(2) polyethers prepared by reacting ethylene oxide and at least one lower alkylene oxide having 3 to 4 carbon atoms with at least one active hydrogen compound containing no more than one active hydrogen and about 12 to about 18 aliphatic carbon atoms to prepare a heteric or block copolymer and further reacting said copolymer with at least one glycidyl ether having a carbon chain length of about 12 to about 18 aliphatic carbon atoms and wherein said glycidyl ether is present in the amount of about 1 to about 20 percent by weight based on the total weight of said thickener, and

(3) polyethers prepared by reacting (a) ethylene oxide and at least one glycidyl ether with at least one active hydrogen compound containing no more than one active hydrogen to prepare a heteric copolymer or (b) ethylene oxide with at least one active hydrogen compound containing no more than one active hydrogen to prepare a homopolymer and further reacting said homopolymer with at least one glycidyl ether, said glycidyl ether having a carbon chain length of about 12 to about 18 aliphatic carbon atoms and wherein said glycidyl ether is present in the amount of about 1 to about 20 percent by weight based on the total weight of said thickener,

and about 10 to about 35 percent by weight based upon the total weight of said polyether-based thickener of:

B. a mixture of a water-soluble amine and an ethoxylated phosphate ester, or an ethoxylated phosphate ester,

wherein said phosphate ester is selected from the group consisting of



and mixtures thereof, wherein EO is ethylene oxide; R is selected from the group consisting of linear or branched chain alkyl groups having about 6 to about 30 carbon atoms, and aryl or alkylaryl groups wherein said arylalkyl groups have about 6 to about 30 carbon atoms; X is selected from the group consisting of the residue of hydrogen, ammonia, an amine, an alkali or alkaline earth metal and mixtures thereof; and n is a number from 1 to 50.

4,395,352

HIGH EFFICIENCY ANTIFOAM COMPOSITIONS AND PROCESS FOR REDUCING FOAMING

Ravindra D. Kulkarni, Pomona; Bernard Kanner, West Nyack, both of N.Y., and Errol D. Goddard, Haworth, N.J., assignors to Union Carbide Corporation, Danbury, Conn.

Continuation-in-part of Ser. No. 920,459, Jun. 29, 1978, abandoned. This application Jan. 14, 1980, Ser. No. 112,138

Int. Cl.³ B01D 19/04; C09K 3/00

U.S. Cl. 252—321 12 Claims

1. An antifoam composition which comprises a polydimethylsiloxane oil, 1–20 parts by weight per 100 parts by weight of the oil of a finely divided hydrophobic silica having a surface area of at least 50 square meters per gram, and 1–20 parts by weight per 100 parts by weight of the oil and solid together of

a siloxane-oxyalkylene block copolymer surfactant having a hydrophilic-lipophilic balance in the range of 4 to 14 wherein the improvement comprises the polydimethylsiloxane oil having a viscosity in the range of 5,000 to 30,000 centistokes at 25° C.

10. A process for reducing foaming in aqueous liquids having a tendency to foam which comprises forming a mixture of said liquid and a composition as defined in claim 1.

4,395,353

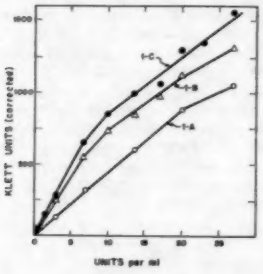
POLYANIONIC HETEROPOLYSACCHARIDE BIOPOLYMERS

David L. Gutnick, Ramat Aviv; Eugene Rosenberg, Raanana; Igal Belsky, Ramat Aviv, and Zinaida Zosim, Kefar Sava, all of Israel, assignors to Petroleum Fermentations N.V., Antilles, Netherlands

Division of Ser. No. 12,971, Feb. 22, 1979, abandoned. This application May 14, 1980, Ser. No. 146,056

Int. Cl.³ B01F *17/30, 17/34, 17/52*

U.S. Cl. 252—356 **10 Claims**



1. Polyanionic heteropolysaccharide biopolymers in which (a) substantially all of the sugar moieties are N-acylated aminosugars, a portion of which is N-acylated-D-galactosamine and another portion of which is N-acylated aminouronic acid, a part of the N-acyl groups of such heteropolysaccharide being N-3-hydroxydodecanoyl groups; and (b) at least 0.2 micromoles per milligram of such heteropolysaccharide consisting of fatty acid esters in which (1) the fatty acids contain about 10 to about 18 carbon atoms and (2) about 50 percent by weight or higher of such fatty acids are composed of 2-hydroxydodecanoic acid and 3-hydroxydodecanoic acid.

4,395,354

EMULSANS

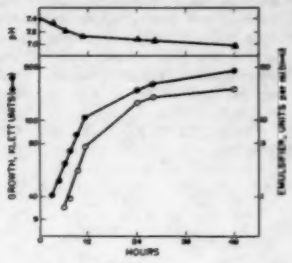
David L. Gutnick, Ramat Aviv; Eugene Rosenberg, Raanana; Igal Belsky, Ramat Aviv, and Zinaida Zosim, Kefar Sava, all of Israel, assignors to Petroleum Fermentations N.V., Antilles, Netherlands

Continuation of Ser. No. 12,971, Feb. 22, 1979, abandoned. This application Jul. 17, 1980, Ser. No. 166,981

Int. Cl.³ B01F *17/30, 17/34, 17/52*

U.S. Cl. 252—356 **28 Claims**

1. Extracellular microbial protein-associated lipopolysaccharides (herein collectively called "α-emulsans") produced by Acinetobacter Sp. ATCC 31012 and its mutants, in which the lipopolysaccharide components (herein collectively called "apo-α-emulsans") are completely N-acylated and partially O-acylated heteropolysaccharides made up of major amounts of D-galactosamine and an aminouronic acid, such apo-α-emulsans containing at least 5 percent by weight of fatty acid esters (1) in which the fatty acids contain from about 10 to about 18 carbon atoms; and (2) about 50 percent by weight or more of such fatty acids are composed of 2-hydroxydodecanoic acid and 3-hydroxydodecanoic acid, the α-emulsans being characterized by a Specific Emulsification Activity of about 200 units per milligram or higher, where one unit per milligram of Specific Emulsification Activity is defined as that amount of emulsifying activity per milligram of bioemulsifier



which yields 100 Klett absorption units using a standard hydrocarbon mixture consisting of 0.1 ml of 1:1 (v/v) hexadecane/2-methylnaphthalene and 7.5 ml of Tris-Mg buffer.

4,395,355

PROCESS AND APPARATUS FOR TREATING A PRESSURIZED FEED STREAM CAPABLE OF UNDERGOING AN ENDOTHERMIC REACTION

Manfred Lembeck, Buch; Patrick W. Kinsella, Wolfratshausen, and Allan M. Watson, Ottobrunn, all of Fed. Rep. of Germany, assignors to Linde Aktiengesellschaft, Fed. Rep. of Germany

Filed May 15, 1981, Ser. No. 264,000

Claims priority, application Fed. Rep. of Germany, Jun. 20, 1980, 3023170

Int. Cl.³ C01B *3/32, 3/48*

U.S. Cl. 252—373 **1 Claim**

1. A process for reforming a pressurized hydrocarbon feed stream comprising dividing said hydrocarbon feed stream into a first hydrocarbon feed stream and a second hydrocarbon feed stream, heating said first hydrocarbon feed stream in a reforming reaction zone so as to cause said reforming reaction to occur and to produce a reforming reaction product, expanding said second hydrocarbon feed stream so as to produce an expanded second hydrocarbon feed stream of reduced pressure and temperature, indirectly contacting said expanded second hydrocarbon feed stream with said reforming reaction product so as to reduce the temperature of said reforming reaction product and increase the temperature of said expanded second hydrocarbon feed stream, and utilizing said expanded second hydrocarbon feed stream having an increased temperature as a fuel for supplying heat to said first hydrocarbon feed stream in said reforming reaction zone.

4,395,356

METHOD FOR REMOVING CATALYST RESIDUES FROM SOLUTIONS OF POLY-1-BUTENE

Lynn H. Slaugh, and Carl L. Willis, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Continuation of Ser. No. 210,907, Nov. 28, 1980, abandoned. This application Dec. 22, 1981, Ser. No. 333,492

Int. Cl.³ B01D *15/06;* **B01J** *37/00*

U.S. Cl. 252—413 **6 Claims**

1. A process for removing catalyst residues from poly-1-butene which comprises contacting an organic phase containing poly-1-butene dissolved in an inert hydrocarbon solvent with an aqueous phase containing an alpha-hydroxysulfonic acid prepared by reacting a carbonyl compound of the general formula R_1R_2CO wherein R_1 and R_2 are individually hydrogen or hydrocarbyl of up to about 7 carbon atoms with sulfur dioxide and water and subsequently separating the poly-1-butene-containing organic phase from the aqueous phase.

4,395,357
CALCIUM SILICATE GRANULES FORMING A MICROPOROUS STRUCTURE

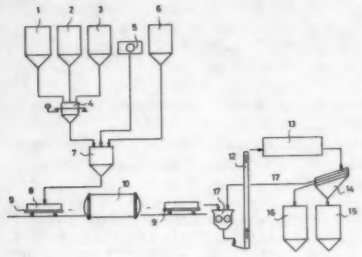
Walter Krämer, Soltau-Friedrichseck, and Rainer Follmann, Minden, both of Fed. Rep. of Germany, assignors to Mars Inc., McLean, Va.

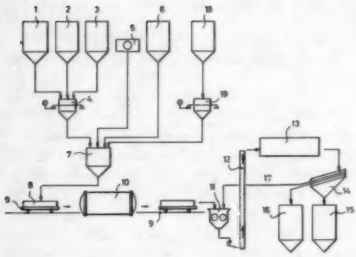
Continuation of Ser. No. 114,140, Jan. 21, 1980, abandoned. This application Jun. 12, 1981, Ser. No. 273,224

Claims priority, application Fed. Rep. of Germany, Jan. 19, 1979, 2902108

Int. Cl.[3] **B01J** *20/22, 20/10;* **A01K** *1/015;* **C01B** *33/24*

U.S. Cl. 252—428 **9 Claims**





1. Calcium silicate granules with a fatty amine addition produced by a process comprising the steps of:

(a) dispersing crystalline and optionally amorphous silicon dioxide or a material containing the same, calcium oxide or a material containing the same, and fatty amine in water, and mixing with a microporous stable foam produced from an anionic surface active substance and water, wherein the molar ratio of calcium oxide to silicon dioxide is 0.8:1 to 1.1:1,

(b) shaping the foam mixture prepared in step (a),

(c) autoclave hardening,

(d) comminuting,

(e) drying, and

(f) grading and recovering particle sizes.

3. Calcium silicate granules having a polyamide wax addition, produced by a process comprising the steps of:

(a) dispersing crystalline and optionally amorphous silicon dioxide, or a material containing the same, and calcium oxide, or a material containing the same, the molar ratio of calcium oxide to silicon dioxide being 0.1:1 to 1.1:1 and a polyamide wax, and mixing with a microporous, stable foam produced in water by means of an anionic, surface-active substance, accompanied by the formation of a foam,

(b) shaping the foam mixture prepared in step (a),

(c) autoclave hardening,

(d) comminuting,

(e) drying, and

(f) grading into particles.

7. Calcium silicate granules having a fatty amine salt addition, produced by the steps comprising:

(a) dispersing crystalline and optionally amorphous silicon dioxide, or a material containing the same, and calcium oxide, or a material containing the same, the molar ratio of calcium oxide to silicon dioxide being 0.8:1 to 1.1:1, and fatty amine salt, mixing in a microporous, stable foam produced in water by means of an anionic, surface-active substance, accompanied by the formation of a foam comprising calcium silicate,

(b) shaping the foam mixture prepared in step (a),

(c) autoclave hardening,

(d) comminuting,

(e) drying, and

(f) grading into particles.

8. Calcium silicate granules having a saponification-resistant alkoxy silane addition, produced by the steps comprising:

(a) dispersing crystalline and optionally amorphous silicon dioxide or a material containing the same, and calcium oxide, or a material containing the same, the molar ratio of calcium oxide to silicon dioxide being 0.8:1 to 1.1.:1 and mixing with a microporous, stable foam produced in water by means of an anionic, surface-active substance, accompanied by the formation of a foam,

(b) shaping the foam mixture prepared in step (a),

(c) autoclave hardening,

(d) drying,

(e) adding saponification-resistant alkoxy silane selected from the group consisting of alkyl alkoxy silanes, whose branched or straight chain alkyl radicals has 1 to 6 carbon atoms and whose branched or straight chain alkoxy radicals have 1 to 3 carbon atoms and phenyl alkoxy silanes, whose alkoxy radical has 1 to 3 carbon atoms or mixtures thereof,

(f) classifying.

4,395,358
TITANIUM TRICHLORIDE CATALYST COMPLEX AND PROCESS FOR THE PRODUCTION THEREOF

Harry J. Wristers, Baytown, Tex., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Division of Ser. No. 11,340, Feb. 12, 1979, Pat. No. 4,262,104, which is a division of Ser. No. 811,507, Jun. 30, 1977, Pat. No. 4,151,112. This application Nov. 19, 1980, Ser. No. 208,212

The portion of the term of this patent subsequent to Apr. 24, 1996, has been disclaimed.

Int. Cl.[3] **C08F** *4/64*

U.S. Cl. 252—429 B **10 Claims**

1. An improved catalyst composition adaptable for use in a stereopolymerization of alpha-olefins comprising:

(a) an organometal compound co-catalyst, in contact with;

(b) a titanium trichloride composition catalyst, said titanium trichloride catalyst being produced by a process comprising:

(i) in a reduction step, contacting titanium tetrachloride with an organo metal compound of the formula R_nAlX_{3-n}, wherein R is a group having 1 to 18 carbon atoms selected from alkyl or aryl, X is a halogen and n is a numeral within the range of $1 \leqq n \leqq 3$ at about −50° C. to about 100° C. in an inert diluent to obtain a reduced solids product;

(ii) in an activation step, contacting the reduced solids of (a) with a chlorinated hydrocarbon and a titanium tetrachloride in the presence of a Lewis base complexing agent, said chlorinated hydrocarbon, titanium tetrachloride and Lewis base complexing agent, respectively, being present in amounts of about 0.1 to about 10 mols chlorinated hydrocarbon, about 0.1 to about 2.0 mols titanium tetrachloride and about 0.1 to about 2.0 mols Lewis base complexing agent per one mol of titanium trichloride in such reduced solids of (a), and said titanium tetrachloride being in a concentration of about 2 to about 15 volume percent at an elevated temperature

within the range of from about 50° C. to about 150° C. for about 5 minutes to about 10 hours until a crystal conversion of the reduced solids product of (a) is obtained; and

(iii) in a recovery step, recovering the resulting activated reduced solids product as said titanium trichloride catalyst complex in high yield.

4,395,359

POLYMERIZATION CATALYST, PROCESS FOR PREPARING, AND USE FOR ETHYLENE HOMOPOLYMERIZATION

Burkhard E. Wagner, Highland Park; Frederick J. Karol; George L. Goeke, both of Belle Mead, all of N.J.; Robert J. Jorgensen, Dunbar, W. Va., and Nils Friis, Macungie, Pa., assignors to Union Carbide Corporation, Danbury, Conn.

Division of Ser. No. 14,412, Feb. 27, 1979, which is a continuation-in-part of Ser. No. 892,037, Mar. 31, 1978, abandoned. This application Mar. 31, 1981, Ser. No. 249,447

Int. Cl.³ C08F *4/64*

U.S. Cl. 252—429 B **7 Claims**

1. A process for preparing a catalyst composition which comprises

(A) forming, a precursor composition of the formula

$$Mg_mTi_1(OR)_nX_p[ED]_q$$

wherein

R is C_1 to C_{14} aliphatic or aromatic hydrocarbon radical, or COR′ wherein R′ is a C_1 to C_{14} aliphatic or aromatic hydrocarbon radical,

X is selected from the group consisting of Cl, Br, I, or mixtures thereof,

ED is an electron donor compound,

m is $\geqq 0.5$ to $\leqq 56$

n is 0 or 1

p is $\geqq 6$ to $\leqq 116$ and

q is $\geqq 2$ to $\leqq 85$ and

by dissolving at least one magnesium compound and at least one titanium compound in at least one electron donor compound so as to thereby form a solution of said precursor composition in said electron donor compound, and recovering said precursor composition from said solution,

said magnesium compound having the structure MgX_2,

said titanium compound having the structure $Ti(OR)_aX_b$

wherein a is 0 or 1, b is 2 to 4 inclusive and a+b=3 or 4

said electron donor compound being a liquid organic compound in which said magnesium compound and said titanium compound are soluble and which is selected from the group consisting of alkyl esters of aliphatic and aromatic carboxylic acids, aliphatic ethers, cyclic ethers and aliphatic ketones,

and said magnesium compound, said titanium compound and said electron donor compound being employed in such amounts as to satisfy the values of m, n, p and q,

(B) diluting said precursor composition with about 1 to 10 parts by weight, per part by weight of said precursor composition, of at least one inert carrier material,

(C) partially activating the precursor composition outside the polymerization zone in a hydrocarbon slurry with >0 to <10 mols of activator compound per mol of titanium in said precursor composition, said activator compound having the structure

$$Al(R'')_cX'_dH_e$$

wherein X′ is Cl or OR‴, R″ and R‴ are the same or different and are C_1 to C_{14} saturated hydrocarbon radicals, d is 0 to 1.5, e is 1 or 0 and c+d+e=3, and

(D) completely activating the precursor composition in a fluid bed polymerization zone with $\geqq 10$ to about 400 mols of said activator compound in the absence of a solvent so as to avoid the need for drying the fully active catalyst to remove the solvent therefrom.

4,395,360

CATALYST COMPONENTS AND CATALYSTS FOR THE POLYMERIZATION OF ALPHA-OLEFINS

Enrico Albizatti, Arona; Enzo Giannetti, Novara, and Umberto Scata, Ferrara, all of Italy, assignors to Montedison S.p.A., Milan, Italy

Filed Apr. 21, 1981, Ser. No. 256,235

Claims priority, application Italy, Apr. 22, 1980, 21535 A/80

Int. Cl.³ C08F *4/64*

U.S. Cl. 252—429 B **6 Claims**

1. Components of catalysts for polymerizing olefins comprising the solid product of the reaction of:

(a) a halogenated Ti compound containing at least a Ti-halogen bond, and

(b) an electron-donor compound not containing active hydrogen atoms (ED) reacted as such or as a complex with product (c), said complex being obtained without cogrinding, and employing in such amount, that from 0.2 to 4 moles of compound (ED) per gram atom of Ti of component (a) are present in the catalytic component with

(c) the solid product, prepared without cogrinding, of the reaction between at least an electron-donor compound containing active hydrogen atoms (HED), selected from aliphatic, cycloaliphatic and aromatic alcohols and thioalcohols having 1 to 20 C, phenols and thiophenols having 6 to 20 C and the silanols having 1 to 20 C, and a Mg dihalide, or complexes thereof with an (ED) compound, said Mg dihalide being obtained by decomposition, with halogenating agents other than the Ti compounds of (a), of reaction product (d) of an organometallic Mg compound of general formula R_mMgX_n, in which R is an alkyl, aryl, cycloalkyl or alkenyl radical having 1 to 20 C, or a group OR, and X is a halogen, R, OR in which R has the meaning as specified or COX′ in which X′ is a halogen, m is $0<m\leqq 2$, n is $0<n<2$ and M+n=2; with a silicium compound selected from polysiloxanes, hydropolysiloxanes, silanols and polysilanols, product (c) being reacted as such without any intermediate pretreatment with an Al-alkyl compound.

4,395,361

CATALYSTS FOR OXYGEN-INITIATED FREE-RADICAL POLYMERIZATION REACTIONS

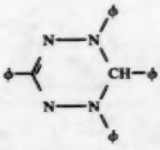
David J. Eickhoff, Crescent Park, Ky., and Medford D. Robbins, Whitewater Township, Franklin County, Ind., assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Aug. 7, 1981, Ser. No. 290,908

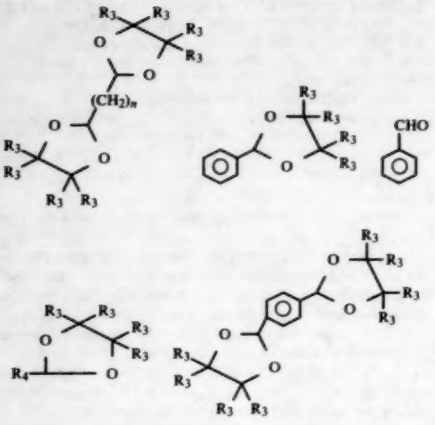
Int. Cl.³ C08L *67/06, 67/00*; C08F *4/32*; B01J *31/12*

U.S. Cl. 252—431 C **12 Claims**

1. A stabilized oxidation catalyst comprising a mixture of (a) a storage stabilizer having the formula

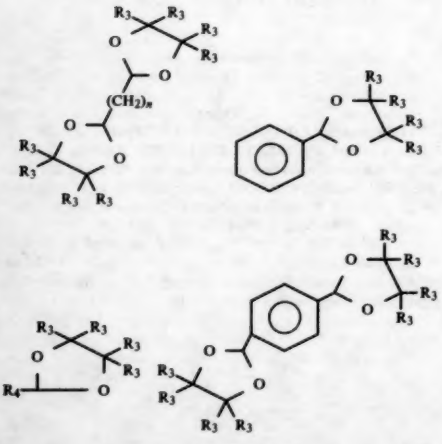


and (b) an oxidation catalyst consisting essentially of: (1) an autoxidizable component having the formula



and mixtures thereof, wherein each R_3 is hydrogen, methyl, phenyl or COOH; R_4 is C_1–C_{20} alkyl or alkenyl; and n is from about 1 to 10; and (2) a peroxide-decomposing transition metal catalyst.

8. An oxidation catalyst for oxygen-initiated free-radical polymerization reactions consisting essentially of: (1) an autoxidizable component having the formula



and mixtures thereof, wherein each R_3 is hydrogen, methyl, or COOH; R_4 is C_1–C_{20} alkyl; and n is from about 1 to 10; and (2) a peroxide-decomposing transition metal catalyst.

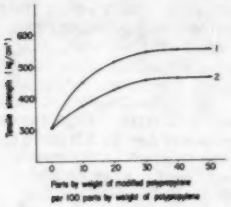
9. An oxidation catalyst according to claim **8** wherein the transition metal catalyst is a cobalt(II) compound.

4,395,362

ELECTROCONDUCTIVE RESIN COMPOSITE MATERIAL FOR MOLDING

Hiroaki Satoh, Tokyo, and Masaru Hiruta, Iwaki, both of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 26, 1981, Ser. No. 296,523
Int. Cl.³ H01B 1/06
U.S. Cl. 252—511 **7 Claims**



1. A resin composite material consisting essentially of 100 parts by weight of polypropylene, from 10 to 50 parts by weight of a modified polypropylene, said modified polypropylene being polypropylene chemically modified with an organic unsaturated carboxylic acid of 3 to 10 carbon atoms or a copolymer of propylene and an organic unsaturated carboxylic acid of 3 to 10 carbon atoms, said modified polypropylene containing 0.5 to 8.0 mol% of said organic unsaturated carboxylic acid as carboxylic acid units, from 5 to 65 parts by weight of carbon fiber having a diameter of from 5 to 20 micrometers and a ratio of length to diameter of not less than 10 and from 5 to 65 parts by weight of electroconductive carbon black having a specific surface area of not less than 800 m^2/g.

4,395,363

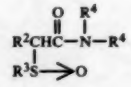
ALPHA-SULFOXIDE AND ALPHA-SULFONE CARBOXYL COMPOUNDS

Robert J. Crawford, Wyoming, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Division of Ser. No. 180,213, Aug. 21, 1980, Pat. No. 4,317,779. This application Dec. 1, 1981, Ser. No. 326,316
Int. Cl.³ C11D 1/52, 1/755, 1/83, 1/94
U.S. Cl. 252—526 **14 Claims**

1. A detergent composition comprising:

(a) from about 0.005% to about 99% by weight of an alpha-substituted compound having the formula:

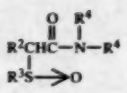


wherein R^2 is a C_6–C_{18} hydrocarbyl group; R^3 is a C_1–C_4 hydrocarbyl group; each R^4 is hydrogen, a C_1–C_4 hydrocarbyl group, or a C_2–C_3 alkylene oxide group, or mixtures thereof, containing from about 1 to about 10 alkylene oxide units; and

(b) from about 1% to about 50% by weight of an organic surfactant selected from the group consisting of anionic, cationic, nonionic, ampholytic, and zwitterionic surfactants, and mixtures thereof.

9. A detergent composition comprising:

(a) from about 0.005% to about 99% by weight of an alpha-substituted compound having the formula:



wherein R^2 is a C_6–C_{18} hydrocarbyl group; R^3 is a C_1–C_4 hydrocarbyl group; each R^4 is hydrogen, a C_1–C_4 hydrocarbyl group, or a C_2–C_3 alkylene oxide group, or mixtures thereof, containing from about 1 to about 10 alkylene oxide units; and

(b) from about 1% to about 95% of a detergent builder material.

4,395,364

DETERGENT COMPOSITION CONTAINING SULFONATE SURFACTANT AND POLYOXYALKYLENE ALKYL OR ALKENYL SULFURIC ACID ESTER SALT

Moriyasu Murata, Chiba, and Kenji Okahashi, Funabashi, both of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 205,220, Nov. 10, 1980, abandoned. This application Apr. 14, 1982, Ser. No. 368,483

Claims priority, application Japan, Nov. 16, 1979, 54-148462

Int. Cl.³ C11D *1/37, 3/065*

U.S. Cl. 252—526 **9 Claims**

1. A powder detergent composition, consisting essentially of (A) from 8 to 30% by weight of anionic surface active agent selected from the group consisting of linear or branched, alkyl benzene-sulfonic acid salts in which the alkyl group has an average carbon atom number of from 10 to 16, olefin-sulfonic acid salts having an average carbon atom number of from 10 to 20 and alkane-sulfonic acid salts having an average carbon atom number of from 10 to 20, wherein the counter ion of said salts is selected from the group consisting of sodium, potassium, ammonium or alkanolamine having 1 to 3 alkanol groups having 2 or 3 carbon atoms, (B) from 1.5 to 15% by weight of polyoxyalkylene alkyl or alkenyl sulfuric acid ester salt selected from the group consisting of compounds having the formula

$$R_1O(PrO)_{m1}SO_3M \quad (2)$$

wherein R_1O is a residue obtained by removal of a hydrogen from coconut oil-derived higher alcohol, beef tallow-derived higher alcohol, synthetic secondary higher alcohol having 8 to 22 carbon atoms, or synthetic primary alcohol having 8 to 22 carbon atoms and having an iso ratio of 20 to 80%, PrO is oxypropylene, m1 is a number of from 1 to 10, and M is an alkali metal, an alkaline earth metal or an alkanolamine having 1 to 3 alkanol groups having 2 or 3 carbon atoms,

compounds having the formula

$$R_1O(PrO)_{m2}(EtO)_{m3}SO_3M \quad (3)$$

wherein each of m2 and m3 is a positive number with the proviso that the sum of m2 and m3 is from 1 to 10 and the m2/m3 ratio is in the range of from 4/1 to 1/4, EtO is oxyethylene, and the other symbols have the same meaning as defined above,

compounds having the formula

$$R_1O(BuO)_{m2}(EtO)_{m3}SO_3M \quad (4)$$

wherein BuO is oxybutylene, and the other symbols have the same meanings as defined above,

compounds having the formula

$$R_1O(PrO,EtO)_{m1}SO_3M \quad (5)$$

wherein (PrO,EtO) is oxypropylene and oxyethylene arranged in random order, and the other symbols have the same meanings as defined above,

compounds having the formula

$$R_1O(BuO)_{m1}SO_3M \quad (6)$$

wherein the symbols have the same meanings as defined above, and compounds having the formula

$$R_1O(PrO,EtO,BuO)_{m1}SO_3M \quad (7)$$

wherein the symbols have the same meanings as defined above, (C) 1 to 20% by weight of detergent builder suitable for use in powder clothes washing detergent compositions, and (D) from 1 to 50% by weight of at least one alkali metal salt selected from the group consisting of alkali metal silicates, alkali metal carbonates and alkali metal sulfates.

4,395,365

METAL CLEANING COMPOSITION CONTAINING A FATTY ACID SUCCROSE ESTER AND OTHER DETERGENT COMPONENTS

Masami Hasegawa, Fuji, and Koji Kato, Uozu, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Aug. 19, 1981, Ser. No. 294,149

Claims priority, application Japan, Sep. 8, 1980, 55-124198

Int. Cl.³ C11D *1/14, 1/66, 1/72*

U.S. Cl. 252—545 **14 Claims**

1. An industrial detergent useful for degreasing and cleansing of metal parts, the detergent being in the form of an aqueous solution and comprising:

(a) 3 to 20 parts by weight of a fatty acid succrose ester having an HLB value within the range of from about 12 to 18;

(b) 3 to 15 parts by weight of a polyoxyethylene alkyl ether having an HLB value within the range of from about 12 to 20;

(c) 1 to 10 parts by weight of a chelating agent for metal ions;

(d) 1 to 5 parts by weight of a petroleum sulfonic acid salt; and

(e) 3 to 10 parts by weight of propylene glycol.

4,395,366

CARBOMETHOXY METHYL NORBORNANES, ORGANOLEPTIC USES THEREOF AND PROCESS FOR PREPARING SAME

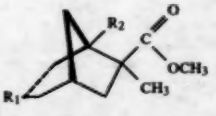
Philip T. Klemarczyk, Old Bridge; James M. Sanders, Eatontown; Manfred H. Vock, Locust; Joaquin F. Vinals, Red Bank; Frederick L. Schmitt, Holmdel, and Edward J. Granda, Englishtown, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 284,107, Jul. 16, 1981, Pat. No. 4,350,823, which is a continuation-in-part of Ser. No. 133,870, Mar. 25, 1980, Pat. No. 4,319,036. This application May 20, 1982, Ser. No. 380,423

Int. Cl.³ C11D *3/50*

U.S. Cl. 252—545 **4 Claims**

1. A process for augmenting or enhancing the aroma of a solid or liquid anionic, cationic, nonionic or zwitterionic detergent comprising the step of adding to a solid or liquid anionic, cationic, nonionic or zwitterionic detergent base an aroma augmenting or enhancing quantity of at least one norbornyl compound defined according to the structure:



wherein the dashed line represents a carbon-carbon single

bond or a carbon-carbon double bond and one of R_1 or R_2 is methyl and the other of R_1 and R_2 is hydrogen.

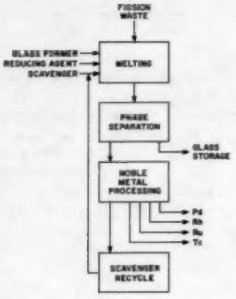
4. The process of claim 1 wherein the detergent is a liquid detergent containing lysine salts of n-dodecyl benzene sulfonic acid.

4,395,367

PROCESS FOR TREATING FISSION WASTE

Charles A. Rohrmann, Kennewick, and Oswald J. Wick, Richland, both of Wash. (granted to U.S. Department of Energy under the provisions of 42 U.S.C. 2182)

Filed Nov. 17, 1981, Ser. No. 322,144
Int. Cl.³ G21F 9/16
U.S. Cl. 252—629 **6 Claims**



1. A process for the treatment of fission waste comprising:
(a) mixing a glass forming agent, a scavenging metal oxide, and a reducing agent with said fission waste;
(b) melting said mixture and thereby forming a glass phase and a metal phase;
(c) separating the two phases; and
(d) cooling said glass phase and thereby forming a stable leach-resistant solid suitable for long-term storage of radioactive materials.

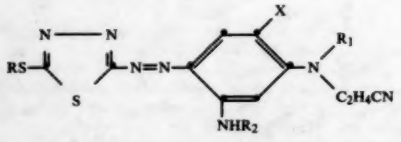
4,395,368

AZO DYES FROM 2-AMINO-5-ORGANOTHIO-1,3,4-THIADIAZOLES AND N-CYANOETHYL-M-ACYLAMIDOANILINES

Max A. Weaver, and Clarence A. Coates, Jr., both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 26, 1981, Ser. No. 315,108
Int. Cl.³ C09B 29/02, 29/36
U.S. Cl. 260—158 **6 Claims**

1. A compound having the formula:



wherein R is alkyl, aryl or cycloalkyl; X is hydrogen, or alkyl; R_1 is hydrogen, alkyl or aralkyl; and R_2 is formyl or alkanoyl; and wherein the alkyl, aryl, and cycloalkyl moieties of R and R_2 may be substituted where appropriate with 1-3 groups independently selected from alkyl, aryl, cycloalkyl, —OH, OOC-alkyl, —COO-alkyl, succinimido, phthalimido, alkoxy, carbamoyl, alkylcarbamoyl, dialkylcarbamoyl, alkanoylamino, halogen, phenoxy and benzoyloxy.

4,395,369

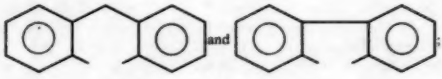
MANUFACTURE OF ISOCYANATE

William A. Henderson, Jr., and Balwant Singh, both of Stamford, Conn., assignors to American Cyanamid Company, Stamford, Conn.

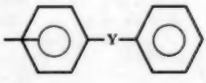
Continuation-in-part of Ser. No. 331,696, Dec. 17, 1981, Pat. No. 4,361,518. This application Mar. 8, 1982, Ser. No. 355,945
Int. Cl.³ C07C 118/00
U.S. Cl. 260—453 P **12 Claims**

1. A process for the production of tertiary aralkyl isocyanates which comprises reacting a halide of the formula

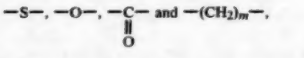
in which X represents a halogen atom, R_1 and R_2 represent the same or different hydrocarbon radicals selected from normal, branched and cyclic alkyl groups, and phenyl, naphthalyl and higher aryl groups, and can be joined to form substituents forming cyclic compounds, such bivalent substituents being selected from—$(CH_2)_n$—where n is an integer from 3 to 5,



and R_3 represents an aromatic hydrocarbon groups selected from phenyl, naphthalyl, higher fused ring aryl and biphenyl groups, polycyclic aromatic hydrocarbon groups of the formula .



in which Y represents a bivalent radical selected from



wherein m is an integer from 1 to 3, and such aromatic groups having halogen, methyl, methoxy substituents or substituents of the formula

with a stoichiometric excess of isocyanic acid in a solution in a solvent for said halide and isocyanic acid.

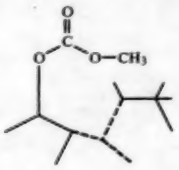
4,395,370

BRANCHED CHAIN ALKENYL METHYL CARBONATES, USES THEREOF IN AUGMENTING OR ENHANCING THE AROMA OF PERFUME COMPOSITIONS, COLOGNES AND PERFUMED ARTICLES AND FORMATE INTERMEDIATES USEFUL IN PREPARING SAME

Richard M. Boden, Monmouth Beach; Theodore J. Tyszkiewicz, Sayreville, and Michael Licciardello, Farmingdale, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed Dec. 10, 1981, Ser. No. 329,222
Int. Cl.³ C07C *69/96*; A61K *7/46*
U.S. Cl. 260—463 **2 Claims**

1. An ester defined according to the structure:



wherein one of the dashed lines represents a carbon-carbon double bond and each of the other of the dashed lines represent carbon-carbon single bonds.

4,395,371

PROCESS FOR THE PREPARATION OF 2-HALOGENO-3-SULPHONYL-ACRYLONITRILES

Siegfried Oeckl; Gero Zahl, both of Cologne, and Walter Radt, Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Oct. 13, 1981, Ser. No. 310,701
Claims priority, application Fed. Rep. of Germany, Oct. 31, 1980, 3041154
Int. Cl.³ C07C *120/00, 121/30, 121/48, 121/70*
U.S. Cl. 260—464 **3 Claims**

1. A process for the preparation of a 2-halogeno-3-sulphonyl-acrylonitrile of the formula

$$R^1—SO_2—CH=CX^1—CN$$

wherein

R^1 denotes C_6 to C_{18} aryl, aralkyl where the aromatic portion has up to 10 carbon atoms and the alkyl portion has up to 6 carbon atoms, C_1 to C_{12} alkyl

or C_6 to C_{17} cycloalkyl, any of which radicals can optionally be substituted by a radical which does not change during the process and

X^1 denotes halogen, which comprises contacting a 2,2-dihalogeno-3-sulphonyl propionitrile of the formula

$$R^1—SO_2—CH_2—CX_2^1—CN$$

wherein

R^1 and X^1 have the meaning given above with a composition consisting essentially of water in a stoichiometric excess at a temperature of 20°–130° C., employing a molar ratio of 2,2-dihalogeno-3-sulphonyl-propionitrile to water of 1:5–550 at pressure of at least 0.5 bar whereby a halogen halide is formed additionally.

4,395,372

ALKYLATION PROCESS

Robert Q. Klutz, Houston, and Lynn H. Slaugh, Cypress, both of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Aug. 9, 1982, Ser. No. 406,665
Int. Cl.³ C07C *121/52*; C07B *27/00*; C07C *2/66*
U.S. Cl. 260—465 R **6 Claims**

1. A process for alkylating benzene and substituted benzenes with olefins having carbon numbers ranging from 3 to about 6 which process comprises contacting said benzene or substituted benzene with said olefin at a temperature ranging from about 50° C. to about 300° C. and a pressure ranging from about 1 to about 200 atmospheres with a rare-earth-exchanged zeolite in the presence of sulfur dioxide.

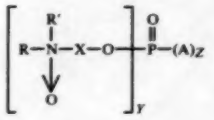
4,395,373

PHOSPHATED AMINE OXIDES

Robert B. Login, Media, Pa., assignor to Jordan Chemical Company, Folcroft, Pa.

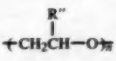
Filed Apr. 7, 1981, Ser. No. 251,851
Int. Cl.³ C07F *9/09*
U.S. Cl. 260—928 **15 Claims**

1. Phosphated Amine Oxides Compounds of the formula



Wherein R and R′, which may be the same or different are alkyl, alkenyl, or alkoxy groups containing from 5 to 24 carbon atoms, R and R′ may also form a cyclic structure and be attached together, R′ may be further selected from the same group as X with the requirement that said group terminate in a hydroxyl or phosphate ester,

X is a polyalkoxide of the formula



Wherein

R″ is hydrogen, C_1–C_{20} alkyl, C_1–C_{20} alkoxy, phenyl,

n is an integer from 1 to 50

Y and Z are integers from

1 to 2 such that when Y is

2, Z is 1 and vice versa,

A is —OM wherein M is hydrogen, alkali metals, alkaline earth metals or quaternary ammonium counterions.

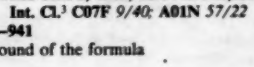
4,395,374

ALKYL N-ARYLSULFENYL-N-DIARYLOXY-PHOSPHINYLMETHYLGLYCINATES

Gerard A. Dutra, Ladue, Mo., and James A. Sikorski, West Lafayette, Ind., assignors to Monsanto Company, St. Louis, Mo.

Filed Jan. 2, 1981, Ser. No. 222,213
Int. Cl.³ C07F *9/40*; A01N *57/22*
U.S. Cl. 260—941 **12 Claims**

1. A compound of the formula



wherein R is phenyl, naphthyl, biphenylyl, benzyl or naphthyl, biphenylyl, benzyl or phenyl substituted with from one or two

substituents independently selected from the group consisting of hydrogen, lower alkyl, lower alkoxy, lower alkylthio, trifluoromethyl, alkoxycarbonyl, methylenedioxy, cyano, nitro and halogen; R_1 is phenyl, naphthyl or phenyl substituted with from one or two substituents independently selected from the group consisting of hydrogen, lower alkyl, lower alkoxy, halogen, trifluoromethyl and nitro; and R_2 is selected from the group consisting of lower alkyl and lower aralkyl.

4,395,375

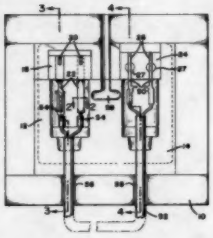
METHOD OF ELECTRICALLY TESTING MOLDED CORD-SETS DURING THE MOLDING OPERATION

William E. Ferris, deceased, late of Stamford, Conn.; Gail Hennessy, executrix, New Fairfield, Conn.; John Doumas, Wilton, and Harry McCarter, Old Greenwich, both of Conn., assignors to Electrolux Corporation, Old Greenwich, Conn.

Filed Oct. 15, 1974, Ser. No. 514,391

Int. Cl.³ B29C *6/04*

U.S. Cl. 264—40.1 **4 Claims**



1. The method of molding and electrically testing a cord-set while the female contacts and male contacts of said set are in a metallic mold having first and second portions comprising the steps of securing female contacts to one end of an insulated cord and securing male contacts to the other end thereof, positioning said female contacts in a first cavity of said first mold portion for molding a female receptacle, positioning said male contacts in a second cavity of said first mold portion for molding a male plug, removably securing said female and male contacts to electrically conductive locating means mounted in fixed positions on said first portion of said mold and electrically insulated therefrom, connecting a plurality of electrical test circuits to connectors carried by said second mold portion in positions to engage said locating means when said first and second mold portions are closed, moving said first and second mold portions into engagement with each other thereby simultaneously electrically connecting said test circuit connectors to said locating means while closing said first and second cavities, introducing thermoplastic molding compound into said first and second cavities to mold a receptacle and a plug on opposite ends of said cord and around at least portions of said contacts, electrically testing said cord-sets by applying test voltages through said test circuits while said first and second mold portions are closed, separating said first and second mold portions and automatically disconnecting said test circuit connectors from said locating means as a result of such separation, and removing said receptacle and said plug from said first mold portion while removing said female and male contacts from said locating means.

4,395,376

INJECTION MOULDING MACHINES

John Matthews, Tadworth, England, assignor to Crayonne Limited, Middlesex, England

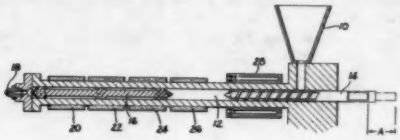
Filed Jul. 29, 1981, Ser. No. 288,047

Claims priority, application United Kingdom, Aug. 12, 1980, 8026165

Int. Cl.³ B29F *1/02*

U.S. Cl. 264—73 **3 Claims**

1. An injection moulding machine for producing varicoloured articles, comprising a barrel housing a reciprocable screw, means for heating the barrel to promote the flow of plastic material in contact with the inner surface of the barrel and a spreader fixed in the discharge end of the barrel for conducting heat from the barrel into the material to fuse the material passing through the spreader, the screw having an internal passage for conducting a cooling fluid to inhibit fusing and mixing of vari-coloured material carried between the flights of the screw.



3. A method of moulding vari-coloured articles in an injection molding machine having a barrel housing a reciprocable screw, comprising the steps of heating the barrel to promote the flow of plastic material in contact with the inner surface of the barrel, cooling the screw internally to inhibit fusing and mixing of vari-coloured material carried between the flights of the screw, and passing the material through a spreader fixed in the discharge end of the barrel to conduct heat from the barrel into the material to fuse the material without mixing it.

4,395,377

POROUS ACRYLIC SYNTHETIC FIBERS COMPRISING CELLULOSE ACETATE IN AN ACRYLIC MATRIX AND METHOD FOR PRODUCING SAID FIBERS

Yoshikazu Kondo; Toshihiro Yamamoto, and Takaji Yamamoto, all of Hofu, Japan, assignors to Kanebo, Ltd., Tokyo and Kanebo Synthetic Fibers, Ltd., Osaka, both of, Japan

Division of Ser. No. 156,993, Jun. 6, 1980, Pat. No. 4,351,879. This application Jul. 12, 1982, Ser. No. 397,282

Claims priority, application Japan, Jun. 18, 1979, 54/77046; Jun. 18, 1979, 54/77049; Oct. 1, 1979, 54/127065; Oct. 1, 1979, 54/127066

Int. Cl.³ B32B *27/02;* **D01F** *8/02, 8/10;* **D02G** *3/00*

U.S. Cl. 264—46.1 **21 Claims**

1. A method for producing porous acrylic synthetic fibers having substantially no microvoids but having mainly macrovoids wherein a surface area A of the voids is not greater than 15 m^2/g, a porosity V is 0.05~0.75 cm^3/g and V/A is 1/30 or more, which comprises spinning an organic solvent solution containing 15~35% by weight of a polymer consisting of 2~30 parts by weight of cellulose acetate and 70~98 parts by weight of an acrylic polymer into a coagulation bath at a temperature of no higher than 30° C. to form fibers

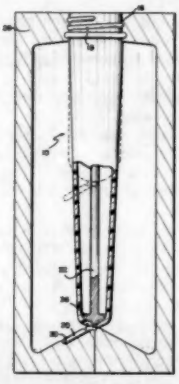
wherein the formation of microvoids is restrained, primarily drawing the spun fibers at a draw ratio of 2.5~8.0 times to form water swelled fibers wherein macrovoids are distributed, drying the water swelled fibers at a temperature of 100°~180° C. to a water content of no greater than 1.0% by weight to substantially eliminate microvoids and secondarily drawing the dried fibers under wet heat at a draw ratio of no greater than 3 times to promote the macrovoid structure.

4,395,378

METHOD FOR MAKING AN INJECTION STRETCH BLOW MOLDED CONTAINER WITH AN INTEGRAL TAB

Alfred C. Alberghini, Dunwoody, and Gerhard E. B. Nickel, Kennesaw, both of Ga., assignors to Sewell Plastics, Inc., Atlanta, Ga.

Filed May 14, 1981, Ser. No. 263,765
Int. Cl.³ B29C *17/07*
U.S. Cl. 264—532 **3 Claims**



1. The method of forming a container having a finish end and an integral appendage opposite the finish end of the container comprising the steps of:

(a) molding a parison having a finish end and an integral appendage formed at an end of the parison opposite the finish end,

(b) situating the parison in a blow mold having a finish-receiving portion, a wall defining a cavity and having a pocket in the wall at a base of the mold opposite the finish-receiving portion and adjacent an axis of the mold,

(c) stretching the parison to a point that the pocket receives the appendage, one surface of the appendage contacting the pocket portion of the wall, another surface of the appendage facing into the mold cavity, and

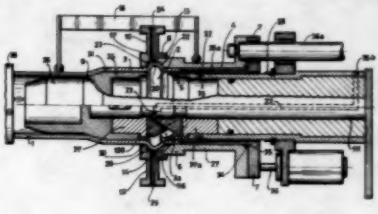
(d) blowing the parison to form a container, said another surface of the appendage acting as a part of the mold wall for a portion of the blown part of the container, the appendage remaining substantially undeformed during the blowing operation.

4,395,379

METHOD AND DEVICE FOR FORMING AN INTERNAL ANNULAR GROOVE IN A PLASTIC TUBE PART

Kornelis Herder, and Wilhelmus F. T. C. Olderaan, both of Hardenberg, Netherlands, assignors to Wavin B.V., Zwolle, Netherlands

Continuation of Ser. No. 865,134, Dec. 28, 1977, abandoned, which is a continuation of Ser. No. 70,353, Aug. 28, 1977, abandoned. This application Mar. 27, 1981, Ser. No. 248,487
Claims priority, application Netherlands, Jun. 30, 1977, 7707299
Int. Cl.³ B29C *17/07*
U.S. Cl. 264—573 **1 Claim**



1. A method for forming an internal annular groove in a plastic tube part by sliding the part onto a core and surrounding same with a mold having an annular recess, heating the tube part and forming the groove by applying an expandable and retractable segmented rigid groove forming a ring in a recess in the interior of the tube part which ring is removed by a retracting action after forming the final groove and cooling down the plastic tube part, subjecting first the plastic tube part to the action of an internal medium overpressure in order to form a groove with a bottom having an inner circumference which is greater than the periphery of the completely expanded groove forming ring, performing an upsetting action simultaneously with the action of said internal medium overpressure and after having formed the groove by means of the internal medium overpressure moving the groove forming ring to its completely expanded position, whereafter the inner side of the groove which was formed by the internal medium overpressure is shrunk onto the completely expanded groove forming ring and the recess for expanding the groove forming ring is closed by a sleeve which is pushed away during sliding of the plastic tube part onto the core.

4,395,380

METHOD OF TESTING FLUID FLOW CONDITION IN EXTENSION OF A PIPE

Donald M. Rosh, 83 Orchrd Rd., Briarcliff Manor, N.Y. 10510

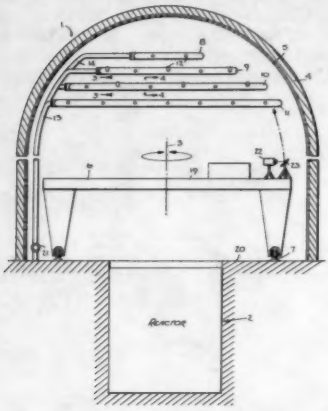
Continuation of Ser. No. 29,648, Apr. 13, 1979, abandoned. This application May 11, 1981, Ser. No. 262,623
Int. Cl.³ G21C *17/00*
U.S. Cl. 376—247 **6 Claims**

5. A method for remotely testing the fluid flow condition of a plurality of metal spray nozzles mounted in spaced relation on a ring-shaped, metal header within the containment building for a nuclear reactor, said nozzles having fluid communication with said header and extending outwardly from said header for delivering fluid supplied to the header to the interior of said building, said method comprising:

supplying air under a pressure above atmospheric pressure to said nozzles by way of said header, said air having a temperature such that the temperature of the air passing through the nozzles is in the range from 5° F. above the temperature of the ambient for the nozzles to 200° F., and continuing the supply of said air to said nozzles for a time sufficient to raise the temperature of an unblocked nozzle to a temperature at least one-half degree F. above the

ambient temperature and above the temperature thereof prior to the supply of air thereto; and

scanning said header and said nozzles while said air is supplied thereto with an infrared camera located remotely from the header and having a thermogram display to



obtain a thermogram of the header and each nozzle, an unblocked nozzle appearing as an image of the nozzle and a blocked nozzle not providing a significant image, whereby the fluid-flow condition of the nozzle is indicated by the image of the extension on the thermogram.

4,395,381

CONFINEMENT ENCLOSURE, NOTABLY FOR A NUCLEAR REACTOR

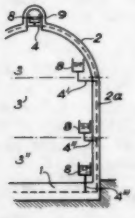
Didier Costes, Meudon, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Continuation of Ser. No. 4,338, Jan. 18, 1979, abandoned. This application Mar. 4, 1981, Ser. No. 240,548

Claims priority, application France, Jan. 30, 1978, 78 02498

Int. Cl.³ G21C *9/00*

U.S. Cl. 376—293 **3 Claims**



2. A confinement enclosure for a nuclear reactor, comprising:

a housing in which a nuclear reactor is located, said housing consisting of a single wall formed of reinforced concrete;

containment means in said single wall for preventing flow of gas through said wall in the event of an accident involving the nuclear reactor, said containment means including a network of channels defined in said wall;

pressurizing means fluidly connected to said channels and at all times maintaining a pressure on fluid inside said channels at a level which is higher than the pressure inside said housing and higher than any fluid passing through a crack in said wall, said channels being located in a plurality of zones with each zone corresponding to a section of wall height, said channels being grouped according to said zones, and the channels of each zone being filled with water in communication with said pressurizing means constituted by a free level water reservoir located inside the enclosure at a higher level than the corresponding height section;

whereby any fluid passing through a crack in said wall is prevented from entering any channel and only fluid passing into said channels is permitted to reach the outside of said housing.

4,395,382

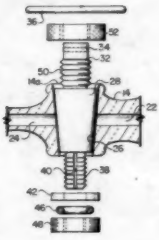
GLASSWARE STOPCOCK WITH FREEZE EXTRACTOR

Robert J. Miskinis, 9758 Airport Vista Rd., Santee, Calif. 92071

Filed Sep. 25, 1981, Ser. No. 305,619

Int. Cl.³ B01L *11/00*

U.S. Cl. 422—103 **4 Claims**



1. A glassware stopcock comprising the combination of:

a glass body member having an inlet and an outlet and a through passage communicating between the inlet and the outlet.

said body member having a tapered transverse bore intersecting said passage,

a smooth, reusable, substantially rigid polymeric, tapered stopcock plug member complimentary to and rotatably mounted in and capable of sealing engagement in said bore, and rotatable between open and closed positions of said passage,

resilient retaining means mounted at the smaller (one) end of said plug for securing said plug in said bore,

said plug member having a threaded stem portion extending from the larger diameter end of said tapered plug and beyond said body member, means for rotating said plug member between said open and closed positions, and

a finger operable one piece retractor nut having a textured outer surface and mounted on said threaded stem (at the other end of said plug) and engageable with the glass body member for applying an axial force to break the sealing engagement of said plug for at least partially retracting said stem from said bore to enable the plug to be rotated between positions against said means and being smaller in length than said threaded stem portion.

4,395,383

APPARATUS FOR CONTROLLING TEMPERATURE BELOW 212 DEGREES FAHRENHEIT IN A STERILIZER CHAMBER

Edward M. Kackos, Belmar, N.J., assignor to Vernitron Corporation, Lake Success, N.Y.

Filed Sep. 19, 1980, Ser. No. 188,973

Int. Cl.³ A61L *2/06, 2/24*

U.S. Cl. 422—112 **4 Claims**

1. Apparatus for sterilizing media in a chamber from a predetermined sub-atmospheric pressure correlation point below 212° F. comprising:

a closed sterilizing chamber for containing said media during sterilization;

vacuum system means connected to said chamber for evacuating air and vapor therefrom, said vacuum system being operable continuously;

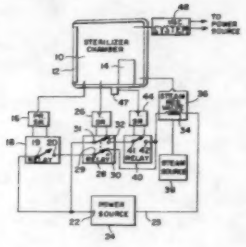
a source of steam operatively connected to said chamber for supplying steam thereto;

a steam regulator valve having electrically operable means and connected between said chamber and said source of steam for selectively injecting steam into said chamber and for cutting off steam supplied to said chamber;

a pressure sensor operatively disposed to sense a sub-atmospheric pressure in said chamber;

a temperature sensor operatively disposed to sense temperature in said chamber;

a first relay operable by said pressure sensor at a preset sub-atmospheric pressure and having normally open first switch contacts;



a second relay operable by said temperature sensor at a preset temperature and having second normally closed switch contacts; and

circuit means connecting said first and second switch contacts in series with said electrically operable means for activating said valve to pass steam into said chamber when the pressure in said chamber reaches said preset sub-atmospheric pressure, whereat said first switch contacts are closed, and wherein said valve is deactivated by opening said first switch contacts to cut off steam from said chamber when the pressure in said chamber, as sensed by said pressure sensor, rises above said preset sub-atmospheric pressure, and wherein the aforedescribed cycle is continued until the temperature in said chamber has reached said preset temperature whereupon said temperature sensor operates said second relay to open said second switch contacts to prevent any further activation of said valve by said pressure sensor.

4,395,384

PROCESS FOR TREATING ZIRCON

Corbett J. Poynton, Perth, Australia, assignor to Allied Eneabba Limited, Perth, Australia

Continuation of Ser. No. 142,369, Apr. 17, 1980, abandoned. This application Apr. 6, 1982, Ser. No. 365,884

Int. Cl.³ C01G *25/02;* **C22B** *34/14;* **C03C** *23/00;* **C09C** *1/28*

U.S. Cl. 423—1 **10 Claims**

1. A process for the removal of surface impurities from zircon grains which comprises coating the zircon grains with a strong basic reagent, the coating being of an amount of 2 to 4% by weight of the zircon grains, calcining the coated grains at a temperature of at least 600° C. for a retention time of more than about 10 minutes and no more than about 20 minutes, and removing the calcinated surface impurities from the calcined grains.

4,395,385

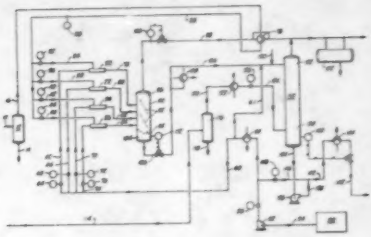
PROCESS FOR REMOVING HYDROGEN SULFIDE FROM SOUR GAS STREAMS

Charles J. Welsh, Oklahoma City, Okla., assignor to Kerr-McGee Refining Corporation, Oklahoma City, Okla.

Filed Nov. 24, 1980, Ser. No. 209,836

Int. Cl.³ B01D *53/34*

U.S. Cl. 423—234 **18 Claims**



1. An improved process for removing hydrogen sulfide from sour gas streams to provide a sweet gas stream substantially free of hydrogen sulfide and an aqueous sodium hydrosulfide solution, the process comprising:

contacting a first sour gas stream containing hydrogen sulfide and carbon dioxide with an aqueous alkali metal hydroxide solution containing a stiochiometric excess of alkali metal hydroxide, based on the amount of hydrogen sulfide present in the first sour gas stream, at conditions preferential to the reaction between the alkali metal hydroxide and the hydrogen sulfide to form a mixed phase effluent;

separating the mixed phase effluent into a gas phase and a partially spent aqueous alkali metal hydroxide solution containing alkali metal hydrosulfide;

recovering the gas phase as a carbon dioxide-containing first sweet gas stream substantially free of hydrogen sulfide;

reactively contacting the partially spent alkali metal hydroxide solution with a substantially carbon dioxide-free, non-process-derived second sour gas stream containing hydrogen sulfide; and

recovering a second sweet gas stream and a substantially alkali metal hydroxide-free aqueous solution of alkali metal hydrosulfide.

4,395,386

APPARATUS FOR ISOTOPE EXCHANGE REACTION

Yamato Asakura; Teiji Suzuki, and Fumio Kawamura, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 12, 1980, Ser. No. 129,753

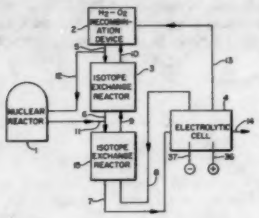
Claims priority, application Japan, Mar. 13, 1979, 54-29082

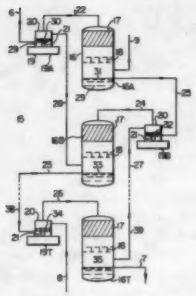
Int. Cl.³ B01D *59/33;* **G21C** *19/32*

U.S. Cl. 423—249 **6 Claims**

1. An apparatus for isotopic exchange reaction, which comprises a plurality of units arranged in succession, each unit comprising a mist-forming means for forming water containing hydrogen isotopes into a mist of fine water particles containing hydrogen isotopes, said mist having a fine particle size of from 0.1 μm to 50 μm, a catalyst bed for promoting isotope exchange reaction between at least one of hydrogen gas and deuterium gas, and the hydrogen isotopes in the mist of fine water particles supplied in a mixed state from the mist-forming means, means for removing the mist from the gas passed through the catalyst bed, a first conduit leading the water containing hydrogen istopes to the mist-forming means, a second conduit for discharging the gas freed from the mist by the mist-removing means, and a third conduit for discharging the mist collected by the mist-removing means as a liquid

containing hydrogen isotopes; the mist-forming means of a preceeding unit being connected to the second conduit of a





succeeding unit and the third conduit of the preceeding unit being connected to the first conduit of the succeeding unit.

4,395,387

METHOD FOR MANUFACTURING WATER GLASS CEMENT HARDENERS

Kurt Goltz, Exton, and William T. West, Strafford, both of Pa., assignors to Pennwalt Corporation, Philadelphia, Pa.

Filed Oct. 13, 1981, Ser. No. 310,559
Int. Cl.³ C01B *25/36*
U.S. Cl. 423—305 **12 Claims**

1. A method of making a condensed aluminum phosphate comprising dry mixing aluminum hydroxide with an ammonium phosphate and heating the mixture at an initial temperature which is sufficient to decompose the ammonium phosphate but below about 250° C. for longer than about two hours and then raising the temperature in stages so as to form by a solid state reaction a condensed aluminum phosphate which is useful as a hardener for water glass cements the X-ray diffraction pattern of said condensed aluminum phosphate showing a high peak at $2\theta=61.1°$, but not showing a peak at $2\theta=11.2°$.

4,395,388

SYNTHETIC CRISTOBALITE

James A. Kaduk, Naperville, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Filed Nov. 16, 1981, Ser. No. 321,531
Int. Cl.³ C01B *33/12, 33/00*
U.S. Cl. 423—339 **7 Claims**

1. A method for preparing cristobalite, which comrises: (1) preparing a mixture containing sources for an oxide of silicon and for an oxide of boron, a base or precursor of such base, a polyhydric alcohol, and water, wherein the composition of the mixture of initial reactants in terms of mole ratios of oxides is:

SiO_2/B_2O_3: 0.5–200
$R(OH)_n/B_2O_3$: 0.01–20
$M_{2/v}O/B_2O_3$: 0.05–10
H_2O/SiO_2: 2–5000

wherein R is a polyvalent hydrocarbyl radical of 2 to about 5 carbon atoms, n is an interger of 2 to about 4, and M is at least one alkali or alkaline earth metal cation having a valence of v, or ammonium; and (2) maintaining the mixture at suitable reaction conditions to effect formulation of the cristobalite, said reaction conditions comprise a pH of the slurry prior to crystallization that falls within the range of about 9.0 to about 13.5, a reaction temperature within the range of about 30° C. to about 300° C. and a pressure of at least the vapor pressure of water at the reaction temperature.

4,395,389

CHLOROSILANE DISPROPORTIONATION PROCESS

Kishankumar K. Seth, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed Mar. 1, 1982, Ser. No. 353,491
Int. Cl.³ C01B *33/04, 33/107*
U.S. Cl. 423—341 **14 Claims**

1. A process for the redistribution of one or more of trichlorosilane, dichlorosilane, and monochlorosilane, said process comprising the steps of:

(a) passing such chlorosilane over a catalyst bed of polyvinyl cyclic, tertiary amine hydrocarbons having nitrogen in the ring, said hydrocarbons being selected from polyvinylpyrrolidone, polyvinylpyrrolidine, polyvinylpyridine, and substituted analogs thereof where the substituent groups do not interfere with catalyst activity and which are essentially homopolymers, for a period of time sufficient to produce a silane containing less chorine than is contained in the chlorosilane fed to the catalyst bed and a silane containing more chlorine than is contained in the chlorosilane fed to the catalyst bed; and

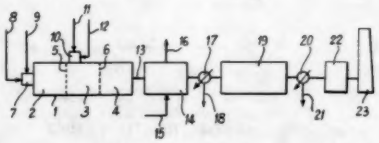
(b) separately recovering the silanes produced by redistribution.

4,395,390

PROCESS TO PRODUCE SULPHUR FROM TWO ACID GASES, BOTH CONTAINING HYDROGEN SULPHIDE AND ONE OF WHICH CONTAINS AMMONIA

Guy Desgrandchamps, Pau; Georges Kvasnikoff, Monein, and Claude Blanc, Pau, all of France, assignors to Scoiete Nationale Elf Aquitaine, Paris, France

Continuation of Ser. No. 33,169, Apr. 25, 1979. This application Jul. 15, 1981, Ser. No. 283,614
Claims priority, application France, May 2, 1978, 78 12899
Int. Cl.³ B01D *17/04*
U.S. Cl. 423—573 G **8 Claims**



1. In a process for producing sulfur from two hydrogen sulfide containing gas steams, one of said gas streams containing ammonia, wherein said gas streams are subjected to a heat-reaction step followed by a gas-cooling step and at least one catalytic reaction step, the improvement which comprises, a heat reaction which comprises:

(a) burning the ammonia containing gas stream to form a first combustion mixture in a first heat-reaction chamber, with air introduced into the first heat-reaction chamber wherein the quantity of air is such that the ratio ρ, of the quantity of air injected into the first heat-reaction chamber to the quantity of air theoretically required for the total

combustion of the hydrogen sulfide and ammonia to sulfur dioxide and nitrogen, respectively, in said first heat-reaction chamber is between 0.4 and 1 and the temperature of the gases in said first heat-reaction chamber is maintained from 1350° to 1550° C.,

(b) passing said first combustion mixture to a second heat-reaction chamber;

(c) burning the gas stream free of ammonia in said second heat-reaction chamber with a quantity of air sufficient to provide a molar ratio of H_2S/SO_2 in the gas mixture leaving said second heat-reaction chamber of about 2/1 and maintaining the temperature of the gases in the second heat-reaction chamber at from 1000° to 1500° C.

4,395,391

UNSYMMETRICALLY SUBSTITUTED DICARBOXYLIC-ACID-BIS-(2,4,6-TRIIODO-ANILIDES), THEIR PREPARATION, AND X-RAY CONTRAST MEDIA CONTAINING SAME

Heinrich Pfeiffer; Wolfgang Mützel, and Ulrich Speck, all of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin, Fed. Rep. of Germany

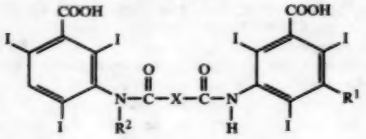
Filed Nov. 24, 1981, Ser. No. 324,368

Claims priority, application Fed. Rep. of Germany, Nov. 25, 1980, 3044814

Int. Cl.³ A61K *49/04*; C07C *101/68*

U.S. Cl. 424—5 **14 Claims**

1. A compound of the formula



wherein

X is C_{1-12}-alkylene optionally interrupted by 1–4 oxygen atoms;

R^1 is —NH—C_{2-4}-alkanoyl, —CH_2NH—C_{2-4}-alkanoyl, in both of which alkanoyl can optionally be substituted by 1 or 2 hydroxy or C_{1-4} alkoxy groups, or —CONHR^3, wherein R^3 is hydrogen, C_{1-4} alkyl or C_{1-5} alkyl substituted by 1–4 hydroxy or C_{1-4}-alkoxy groups;

R^2 is hydrogen or C_{1-4} alkyl;

or a physiologically compatible salt thereof with an inorganic or organic base.

10. An x-ray contrast medium comprising an amount of a compound of claim 1 effective as an x-ray contrast agent and a pharmaceutically acceptable carrier.

4,395,392

METHOD FOR TREATING KIDNEY STONES

Richard L. Wolgemuth, Plain City, Ohio, assignor to Adria Laboratories Inc., Columbus, Ohio

Continuation-in-part of Ser. No. 162,477, Jun. 24, 1980, abandoned. This application Jun. 29, 1981, Ser. No. 278,014

Int. Cl.³ A61K *31/795*

U.S. Cl. 424—78 **2 Claims**

1. A treatment for decreasing urinary calcium content which comprises orally administering to a host in need of such treatment, a therapeutically effective amount of an agent selected from water-soluble vinylbenzenesulfonic acid polymers having a viscosity average molecular weight in the range of from about 50,000 to about 500,000 and containing less than 5% by weight of polymers having a molecular weight of less than 20,000, wherein the polymers have from about 70 to over 90% molar monosulfonation and the nontoxic pharmaceutically acceptable salts thereof.

4,395,393

ARTIFICIAL BLOOD EMULSIFIERS

Irving R. Schmolka, Grosse Ile, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Aug. 10, 1981, Ser. No. 291,264

Int. Cl.³ A61K *31/74, 31/02*

U.S. Cl. 424—78 **6 Claims**

1. An artificial blood comprising from 10 to 40 percent by weight of a perfluoro chemical, from 40 to 80 percent by weight physiological saline and from 2 to 8 percent by weight of a polyoxybutylene-polyoxyethylene block copolymer emulsifier, said emulsifier being a cogeneric mixture of conjugated polyoxybutylene-polyoxyethylene compounds containing in their structure oxybutylene groups, oxyethylene groups and an organic radical derived from a water-soluble organic compound containing a plurality of reactive hydrogen atoms and 2 to 12 carbon atoms; the compounds being characterized in that all of the oxybutylene groups are present in polyoxybutylene chains that are attached to the organic radical at the site of a reactive hydrogen atom thereby constituting a polyoxybutylene polymer; the oxyethylene groups being attached to the polyoxybutylene polymer in polyoxyethylene chains; the average molecular weight of the polyoxybutylene polymers in the mixture being between about 1200 and 3000, as determined by hydroxyl number, and the oxyethylene groups present constituting 60 to 85 percent by weight of the mixture.

4,395,394

USE OF LIPID AMINES FORMULATED WITH FAT OR LIPID EMULSIONS AS VACCINE ADJUVANTS

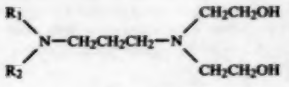
John S. Wolff, III, River Vale; George R. Hemsworth, Sparta, both of N.J., and Keith E. Jensen, Waterford, Conn., assignors to Pfizer Inc., New York, N.Y.

Division of Ser. No. 88,638, Oct. 26, 1979, Pat. No. 4,310,550. This application Oct. 23, 1981, Ser. No. 314,240

Int. Cl.³ A61K *39/00, 39/12*

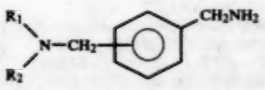
U.S. Cl. 424—88 **12 Claims**

1. A method of inducing or enhancing the immunogenic response of an antigen in man or an animal which comprises parenteral co-administration to said man or animal of said antigen and a pharmaceutical composition which comprises a compound of the formula



(I)

or



(II)

or a pharmaceutically acceptable acid addition salt thereof wherein R_1 and R_2 are each alkyl of 12 to 20 carbon atoms;

and a lipid or fat emulsion comprising about 10% vegetable oil and about 1.2% phospholipids;

in an amount to effectively induce or enhance the immunogenic response of said antigen.

4,395,395

DETECTION OF NON-A, NON-B HEPATITIS ASSOCIATED ANTIGEN

Edward Tabor, Rockville, and Robert J. Gerety, Potomac, both of Md., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Continuation-in-part of Ser. No. 192,291, Sep. 30, 1980, abandoned, which is a continuation-in-part of Ser. No. 40,921, May 21, 1979, Pat. No. 4,356,146. This application Nov. 10, 1981, Ser. No. 319,995

Int. Cl.³ A61K *39/12*; C07G *7/00*; A61K *37/00*

U.S. Cl. 424—89 4 Claims

1. A vaccine effective against non-A, non-B hepatitis infection in mammals comprising an antigen isolated from a specimen of blood serum or liver tissue which has been shown to transmit non-A, non-B hepatitis.

4,395,396

BLOOD-COAGULATION-PROMOTING PREPARATION BASED ON HUMAN PROTEINS AND A METHOD OF PRODUCING THE SAME

Johann Eibl; Otto Schwarz; Fritz Elsinger, all of Vienna, and Anton Philapitsch, Ebenfurt, all of Austria, assignors to Immuno Aktiengesellschaft für Chemisch-medizinische Produkte, Vienna, Austria

Filed Jul. 14, 1981, Ser. No. 283,143

Claims priority, application Austria, Jul. 22, 1980, 3781/80

Int. Cl.³ A61K *35/14*

U.S. Cl. 424—101 14 Claims

1. A blood-coagulation-promoting preparation based on human proteins, having a content of coagulation factors II, VII, IX and X and factor-VIII-inhibitor-by-passing-activity (FEIBA), which preparation is characterized in that

it is free of thrombogenic activity up to at least 2 units of FEIBA per kg rabbit in the thrombosis inducing activity test according to Wessler,

it is free of kallikrein activity and free of prekallikrein activator activity, measured in an aqueous solution of said preparation with a FEIBA concentration of up to at least 10 units per ml,

it is affinity-chromatographically separable on dextran sulphate agarose by means of an NaCl gradient so as to obtain an eluate containing a protein with factor IX activity and an eluate containing a protein with FEIB-activity, said protein with factor IX activity eluting at a lower NaCl concentration than said protein with FEIB-activity,

said eluate containing said protein with factor IX activity and said eluate containing said protein with FEIB-activity contain α- and β-globulins when electrophoretically separated thus obtaining a separation curve having a main peak in the α-globulin region corresponding to a content of 60 to 80% of the total protein, a shoulder of 10 to 20% of the total protein following thereupon, and a slightly pronounced peak in the β-globulin region corresponding to a content of 10 to 20% of the total protein following upon the shoulder-like course of said separation curve.

4,395,397

APPARATUS AND METHOD FOR KILLING UNWANTED CELLS

Howard M. Shapiro, West Newton, Mass., assignor to Sidney Farber Cancer Institute, Inc., Boston, Mass.

Filed Sep. 17, 1981, Ser. No. 303,141

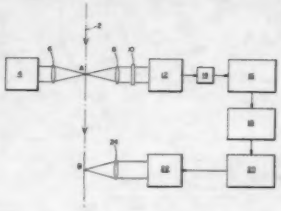
Int. Cl.³ A61K *35/14*; A61L *2/08*; G21K *5/00*

U.S. Cl. 424—101 4 Claims

2. A method for killing, in a flowing liquid stream containing a suspension of living cells, a subpopulation of unwanted cells having one or more characteristics distinguishing them from the rest of said living cells, said method comprising

detecting the presence of unwanted cells in a flowing stream containing a suspension of living cells,

generating signals in response to the presence of said unwanted cells in said flowing stream, and



in response to said signals, providing pulses of laser light focused on said flowing stream to impinge on and kill said unwanted cells in said flowing stream.

4,395,398

DENTAL HEMOSTATIC COMPOSITION

Hiroji Yamamoto, Kawabe, Japan, assignor to Bee Brand Medico Dental Co., Ltd., Osaka, Japan

Filed Mar. 31, 1981, Ser. No. 249,726

Claims priority, application Japan, Apr. 2, 1980, 55-43973

Int. Cl.³ A61K *33/30*, *33/26*, *7/16*, *33/06*

U.S. Cl. 424—145 8 Claims

1. A liquid dental hemostatic composition consisting essentially of astringent, surfactant and carrier or diluent,

said astringent being a member selected from the group consisting of aluminum chloride, tannic acid, ferric chloride, zinc chloride and potassium aluminum sulfate and the amount of aluminum chloride being from 5 to 30 w/v%, the amount of tannic acid being 10 to 35 w/v%, the amount of ferric chloride being 5 to 25 w/v%, the amount of zinc chloride being 10 to 45 w/v% and the amount of potassium aluminum sulfate being 1 to 10 w/v%,

said surfactant being a member selected from the group consisting of cetyl pyridinium chloride, benzalkonium chloride, benzethonium chloride, sodium lauryl sulfate and a polyoxyethylene sorbitan fatty acid ester and the amount thereof being 0.01 to 2.0 w/v%, and

said carrier or diluent being a member selected from the group consisting of water and a mixture of water with ethanol, propylene glycol, glycerin or a polyoxyethylene glycol having polymerization degree of 200 to 400,

all percentages being based on the total composition.

4,395,399

GLYCOPEPTIDES AND METHOD FOR PREPARING SAME

Jury A. Ovchinnikov; Vadim T. Ivanov; Larisa I. Rostovtseva; Tatyana M. Andronova; Irina B. Sorokina, and Veronika P. Malkova, all of Moscow, U.S.S.R., assignors to Institut Bioorganicheskoi Khimii Imeni M.M. Shemyakina Akademii Nauk SSSR, Moscow, U.S.S.R.

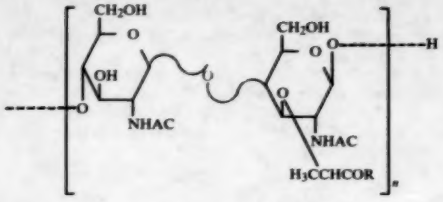
Filed Nov. 1, 1978, Ser. No. 956,538

Claims priority, application U.S.S.R., Nov. 2, 1977, 2543268

Int. Cl.³ A61K *37/02*; C07C *103/52*; C07G *7/00*

U.S. Cl. 424—177 9 Claims

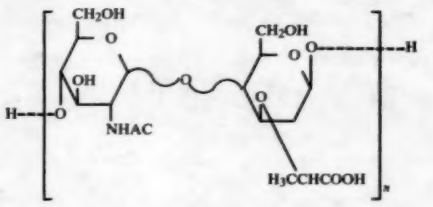
1. Glycopeptides of the general formula:



where n=1 or 2; R is a residue of a linear peptide of 2 to 5 amino acids and Ac is acetyl.

8. A method of inhibiting the growth of tumors in mammals which comprises administering thereto an effective amount of a compound as claimed in claim **1**.

9. A method for preparing glycopeptides as claimed in claim **1**, **2**, **3**, **4**, **5**, **6** or **7** comprising condensation of non-blocked muramyl-containing N-acetyl aminosugars of the formula:



wherein n=1 or 2 and Ac is acetyl with protected linear peptides as defined in, said reaction proceeding by activation of the moiety of said unprotected aminosugars of formula II and participation of these activated aminosugars in the coupling reaction.

4,395,400

NONAPEPTIDE, A PROCESS FOR ITS PREPARATION, AN AGENT CONTAINING IT AND ITS USE

Wolfgang König, Hofheim am Taunus; Rolf Geiger, Frankfurt am Main, and Jürgen K. Sandow, Königstein, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

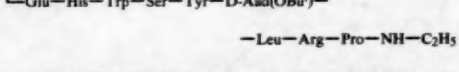
Filed Jun. 1, 1981, Ser. No. 268,677

Claims priority, application Fed. Rep. of Germany, Jun. 3, 1980, 3020941

Int. Cl.³ A61K *37/00*; **C07C** *103/52*

U.S. Cl. 424—177 **4 Claims**

1. The peptide of the formula



in which -D-Aad(OBu^t)- represents D-α-aminoadipic acid δ-tert.-butyl ester.

4,395,401

RENALLY ACTIVE DIPEPTIDES

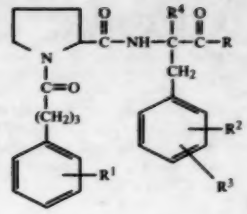
Francis R. Pfeiffer, Cinnaminson, N.J., assignor to SmithKline Beckman Corporation, Philadelphia, Pa.

Filed Sep. 9, 1981, Ser. No. 300,546

Int. Cl.³ A61K *37/00*; **C07C** *103/52*

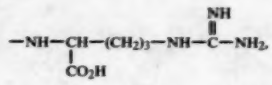
U.S. Cl. 424—177 **11 Claims**

1. A chemical compound of the structural formula:



in which:

R is



or —NH—$(CH_2)_3$—NH_2;

R^1, R^2 or R^3 are each hydrogen, hydroxy or methoxy; and R^4 is lower alkyl of 1–3 carbons; or pharmaceutically acceptable acid addition salts thereof.

4,395,402

ANALGESIC AGENT

Hamao Umezawa; Tomio Takeuchi, both of Tokyo; Takaaki Aoyagi, Fujisawa; Mitsugu Hachisu, Tokyo; Kenji Kawamura, Ohiso; Shunzo Fukatsu, and Yasuharu Sekizawa, both of Tokyo, all of Japan, assignors to Zaidan Hojin Biseibutsu Kagaku Kankyu Kai, Japan

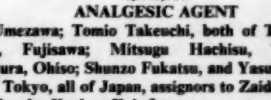
Filed Sep. 21, 1981, Ser. No. 303,938

Claims priority, application Japan, Sep. 24, 1980, 55-131583

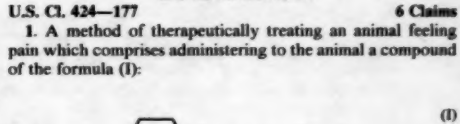
Int. Cl.³ A61K *37/00*

U.S. Cl. 424—177 **6 Claims**

1. A method of therapeutically treating an animal feeling pain which comprises administering to the animal a compound of the formula (I):



wherein R_1 denotes a hydrogen atom or a hydroxyl group, X denotes a group —COR_2 where R_2 is a hydroxyl group, a lower alkoxy group, a benzyloxy group, an amino group or a lower alkyl mono- or di-substituted amino group, or X denotes a group —CH_2OH, a group



where R_3 and R_4 are equal to each other or are different from each other and are each a hydrogen atom, an alkyl group of 1 to 7 carbon atoms, a hydroxyalkyl group containing 1 to 7 carbon atoms, a mercaptoalkyl group containing 1 to 7 carbon atoms, a carboxyamidoalkyl group containing 2

to 8 carbon atoms, an aminoalkyl group containing 1 to 7 carbon atoms, a guanidyl-N-alkyl group containing 2 to 4 carbon atoms, an alkylmercaptoalkyl group containing 2 to 8 carbon atoms, a carboxylalkyl group containing 2 to 8 carbon atoms, an aryl group, especially phenyl, an aralkyl group, especially phenyl-(C_1–C_4)alkyl, or a substituted aralkyl group, and Y is a group —CH_2OH, a group —COR_2 or a group —CH_2COR_2 where R_2 is as defined above,

n is zero or 1, and the asymmetric carbon atoms present in the compound may take the R-configuration or the S-configuration or a combination thereof in a non-toxic amount sufficient to reduce or eliminate the pain.

4,395,403

NOVEL POLYPEPTIDES, PROCESSES FOR THEIR PRODUCTION, PHARMACEUTICAL COMPOSITIONS COMPRISING SAID POLYPEPTIDES AND THEIR USE

Wilfried Bauer, Lampenberg, and Janos Pless, Basel, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

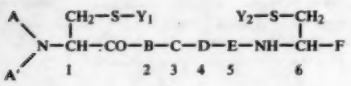
Continuation-in-part of Ser. No. 208,888, Nov. 21, 1980, abandoned. This application Nov. 16, 1981, Ser. No. 321,663

Claims priority, application Switzerland, Nov. 27, 1979, 10524/79; Jun. 13, 1980, 4574/80

Int. Cl.³ A61K *37/00;* **C07C** *103/52*

U.S. Cl. 424—177 **21 Claims**

1. A polypeptide of formula (I)



(I)

wherein

A is C_{1-12} alkyl, C_{7-10} phenylalkyl or a group of formula RCO—, whereby

(i) R is hydrogen, C_{1-11} alkyl, phenyl or C_{7-10} phenylalkyl, or

(ii) RCO— is

(a) an L- or D-phenylalanine residue optionally ring-substituted by halogen, NO_2, NH_2, OH, C_{1-3} alkyl and/or C_{1-3} alkoxy

(b) —Asn— or the residue of a natural α-amino acid having a hydrocarbyl side chain other than defined under (a) above or of a corresponding D-amino acid, or

(c) a dipeptide residue in which the individual amino acid residues are the same or different and are selected from those defined under (a) and/or (b) above, the α-amino group of amino acid residues (a) and (b) and the N-terminal amino group of dipeptide residues (c) being optionally mono- or di-C_{1-12} alkylated,

A′ is hydrogen or, when A is C_{1-12} alkyl or C_{7-10} phenylalkyl, also C_{1-12} alkyl or C_{7-10} phenylalkyl,

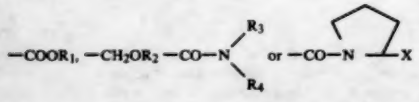
B is —Phe— optionally ring-substituted by halogen, NO_2, NH_2, OH, C_{1-3} alkyl and/or C_{1-3} alkoxy,

C is —(L)— or —(D)—Trp— optionally α-N-methylated and optionally benzene-ring-substituted by halogen, NO_2, NH_2, OH, C_{1-3} alkyl and/or C_{1-3} alkoxy,

D is —Lys— optionally α-N-methylated and optionally ε-N-C_{1-3} alkylated,

E is —Thr— or —Ala— each in (D)- or (L)- form and each being optionally α-N-methylated,

F is a group of formula



wherein

R_1 is hydrogen or C_{1-3} alkyl,

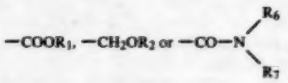
R_2 is hydrogen or the residue of a physiologically acceptable, physiologically hydrolysable ester,

R_3 is hydrogen, C_{1-3} alkyl, phenyl, benzyl or C_{9-10} phenylalkyl,

R_4 is hydrogen, C_{1-3} alkyl or, when R_3 is hydrogen or methyl, also a group of formula —CH(R_5)—X wherein

R_5 is hydrogen, —$(CH_2)_2$—OH, —$(CH_2)_3$—OH, —CH_2—OH, —$CH(CH_3)$—OH, isobutyl or benzyl and

X is a group of formula



wherein

R_1 and R_2 have the meanings given above,

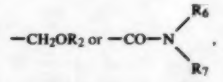
R_6 is hydrogen or C_{1-3} alkyl and

R_7 is hydrogen, C_{1-3} alkyl, phenyl or C_{7-10} phenylalkyl, the group —CH(R_5)—X having the D- or L-configuration, and

Y_1 and Y_2 are each hydrogen or together represent a direct bond,

whereby the residues in the 1- and 6-position each independently have the L- or D-configuration,

with the proviso (i) that D- and/or L-cysteine residues are present at the 1- and 6-positions only, and (ii) that when R_5 is benzyl, X is a group of formula



or a group of formula —$COOR_1$, wherein R_1 is C_{1-3} alkyl, or a pharmaceutically acceptable acid addition salt or complex thereof.

4,395,404

SYNTHETIC THYMOSIN β_3 AND β_4 ANALOGUES

Teresa L. K. Low, Annandale, Va., and Allan L. Goldstein, Washington, D.C., assignors to George Washington University, Washington, D.C.

Filed May 14, 1982, Ser. No. 378,463

Int. Cl.³ A61K *37/00;* **C07C** *103/52*

U.S. Cl. 424—177 **13 Claims**

1. A peptide of the formula

R-Gly-Glu-Ser-R_1

wherein R represents H-Q, Q-Ala-, Q-Gln-Ala, Q-Glu-Lys-Gln-Ala, Q-Gln-Glu-Lys-Gln-Ala-, Q-Glu-Gln-Glu-Lys-Gly-Ala, Q-Ile-Glu-Gln-Glu-Lys-Gln-Ala, Q-Thr-Ile-Glu-Gln-Glu-Lys-Gln-Ala-, Q-Glu-Thr-Ile-Glu-Gln-Glu-Lys-Gln-Ala, or Q-Gln-Sar-wherein Q represents H or acyl; and R_1 represents -OH, -A-C or -A-B-C wherein A represents Asp or Asn, B represents -Glu-Ile-Thr- and C represents -Ala-Lys-Thr-Oh.

and the pharmaceutically acceptable acid or base addition salts thereof.

4,395,405

ALKYL-KETOHEXOPYRAND-SIDE DERIVATIVES AND METHOD OF USE

Kanji Noda, Chikushino; Akira Nakagawa, Tosu; Yasushi Haraguchi, Kamimine; Koichiro Ueda; Munehiko Hirano, both of Tosu; Itsuo Nishioka, Fukuoka; Akira Yagi, Kasuya; Akihide Koda, Gifu, and Hiroyuki Ide, Fukuoka, all of Japan, assignors to Hisamitsu Pharmaceutical Co., Inc., Tosu, Japan

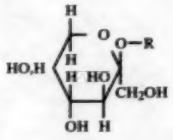
Filed May 15, 1980, Ser. No. 150,129

Claims priority, application Japan, May 23, 1979, 54-64769

Int. Cl.[3] A61K *31/70*; C07H *15/04*

U.S. Cl. 424—180 5 Claims

3. The method of selectively treating the production of antibody immune globulins causing allergic diseases without inhibiting the production of immune globulins governing immune reaction by administering an antiallergic effective amount of a compound represented by the following general formula



(I)

wherein R is an alkyl group having 3–6 carbon atoms, the compounds excluding the D-fructose derivative wherein R is n-propyl group.

4,395,406

5-HALOPYRIMID-2-ONES

Mikkel J. Gacek; Reidar Oftebro; Soren Laland, and Kjell Undheim, all of Oslo, Norway, assignors to Nyegaard & Co. A/S, Norway

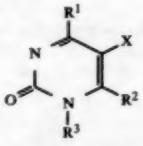
Continuation of Ser. No. 61,269, Jul. 27, 1979, abandoned, which is a continuation of Ser. No. 937,579, Aug. 29, 1978, abandoned, which is a continuation of Ser. No. 732,189, Oct. 13, 1976, abandoned. This application Jul. 7, 1980, Ser. No. 166,600

Claims priority, application United Kingdom, Oct. 16, 1975, 42509/75

Int. Cl.[3] A61K *31/505*; C07D *239/36, 239/56*

U.S. Cl. 424—180 9 Claims

1. A compound of the formula:



(I)

wherein X represents a fluorine, chlorine or bromine atom; R^1 and R^2, which may be the same or different, each represent hydrogen or a group Alk or SAlk; and R^3 represents a group Alk; Alk being an alkyl, alkenyl or alkynyl group having up to 4 carbon atoms, which group may carry one or more halogen atoms or oxo groups or optionally substituted hydroxy, mercapto, carboxyl, carboxamido or amino groups, wherein the optional substituent is a C_{1-4} alkyl, alkenyl, or alkynyl group, with the proviso that R^3 is other than a methyl or ethyl group; or salts thereof.

7. A pharmaceutical composition for the inhibition of the metaphase in the growth of malignant tumors and leukaemia, comprising in association with a pharmaceutical carrier or excipient, at least one compound as claimed in claim 1.

4,395,407

NOVEL PARASITICIDAL POUR-ON COMPOSITIONS

John M. Ballany, Cumbernauld, and Andrew R. Galbraith, Glasgow, both of Scotland, assignors to Janssen Pharmaceutica N.V., Beerse, Belgium

Filed Apr. 5, 1982, Ser. No. 365,700

Claims priority, application United Kingdom, May 8, 1981, 8114169; Nov. 16, 1981, 8134406

Int. Cl.[3] A61K *31/675, 31/425*

U.S. Cl. 424—200 19 Claims

1. A pour-on or spot-on composition for eradicating or controlling parasites in non-human animals, said compositions comprising

(a) from 1 to 30% by weight of tetramisole and/or levamisole;

(b) from 2 to 15% by weight of phosmet; and

(c) one or more optionally substituted aliphatic carboxylic acids, having each a pK_a-value comprised between 0.6 and 6 in a molar excess of 1.5:1 to 12:1 over tetramisole and/or levamisole

in a suitable solvent and/or carrier.

4,395,408

NOVEL STEROIDS

Vesperto Torelli, Maisons-Alfort; Roger Deraedt, Pavillons-sous-Bois, and Lucien Nedelec, Le Raincy, all of France, assignors to Roussel Uclaf, Paris, France

Filed Aug. 14, 1981, Ser. No. 292,794

Claims priority, application France, Nov. 21, 1980, 80 24749

Int. Cl.[3] C07J *5/00*; A01N *45/00*; C07C *117/00*

U.S. Cl. 424—238 13 Claims

1. A compound selected from the group consisting of (Z) 3α-amino-$\Delta^{17(20)}$-5α-pregnene, (20S) 3α-amino-19-nor-5α-pregnane-20-ol and (20S) 3β-amino-19-nor-5α-pregnane-20-ol and their non-toxic, pharmaceutically acceptable acid addition salts.

6. A composition for the treatment of auto immuno maladies resulting from a deficiency of lymphocytes or malady of an organ comprising an amount of at least one compound of claim 1 in an amount sufficient to treat autoimmuno maladies and an inert carrier.

4,395,409

CARBAMOYLOXYAMINO-1,4-BENZODIAZEPINES AND MEDICAMENTS CONTAINING THESE COMPOUNDS

Manfred Försch, Nauheim, and Hermann Gerhards, Hofheim am Taunus, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

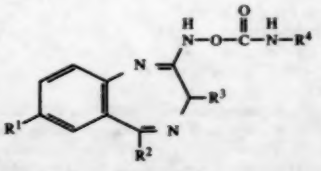
Filed Jun. 2, 1981, Ser. No. 269,689

Claims priority, application Fed. Rep. of Germany, Jun. 4, 1980, 3021107

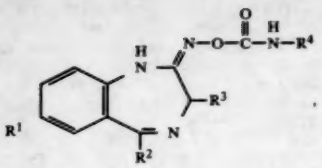
Int. Cl.[3] C07D *243/20*; A61K *31/55*

U.S. Cl. 424—244 9 Claims

1. A carbamoyloxyamino-1,4-benzodiazepine of the formula



or of the formula



or a physiologically tolerated salt of such a compound, wherein

R^1 is halogen, nitro, or trifluoromethyl;

R^2 is phenyl, pyridyl, or phenyl which is mono- or di-substituted by C_1–C_4 alkyl, C_1–C_4 alkoxy, hydroxy, halogen, or trifluoromethyl;

R^3 is hydrogen, C_1–C_4 alkyl, monoalkylcarbamoyloxy, or dialkylcarbamoyloxy; and

R^4 is phenyl or phenyl which is mono- or di-substituted by halogen, nitro, cyano, trifluoromethyl, C_1–C_4 alkyl, C_1–C_4 alkoxy, hydroxy, or dialkylamino having 1–4 carbon atoms in each alkyl.

4,395,410

QUATERNARY AMMONIUM ANTIARRHYTHMIC DRUGS

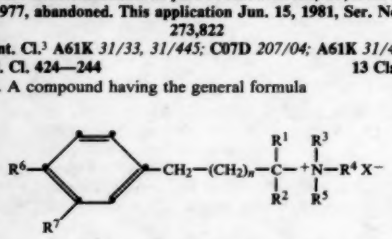
Bryan B. Molloy, North Salem, and Mitchell I. Steinberg, Indianapolis, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 102,043, Dec. 10, 1979, Pat. No. 4,289,787, which is a continuation-in-part of Ser. No. 861,789, Dec. 19, 1977, abandoned. This application Jun. 15, 1981, Ser. No. 273,822

Int. Cl.[3] **A61K** *31/33, 31/445;* **C07D** *207/04;* **A61K** *31/40*

U.S. Cl. 424—244 **13 Claims**

1. A compound having the general formula



wherein:

n is 1 or 2;

R^1 is hydrogen or C_1–C_2 alkyl;

R^2 is hydrogen or C_1–C_3 alkyl;

R^3 is C_1–C_4 alkyl or phenyl C_1–C_4 alkyl;

R^4 and R^5 taken together with the adjacent nitrogen to which they are attached complete a heterocyclic ring having 4 to 7 carbon atoms;

R^6 and R^7 independently are hydrogen, hydroxy, halogen, nitro, C_1–C_3 alkoxy, or C_1–C_3 alkyl, provided that at least one of R^6 and R^7 is hydrogen, and

X is a therapeutically acceptable anion.

10. A method of treating re-entrant arrhythmias in humans suffering from such arrhythmias and in need of treatment or in humans suspected of developing a re-entrant arrhythmia comprising administering to such subject an antiarrhythmically effective dose of a compound of claim **1**.

4,395,411

PYRIMIDINYL CEPHALOSPORANIC ACID DERIVATIVES AND PHARMACEUTICAL COMPOSITIONS

Takashi Kamiya, Suita; Tsutomu Teraji, Toyonaka; Yoshiharu Nakai, Otsu; Kazuo Sakane, Amagasaki, and Jiro Goto, Suita, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

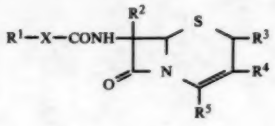
Division of Ser. No. 32,778, Apr. 24, 1979, Pat. No. 4,267,176, which is a continuation-in-part of Ser. No. 960,226, Nov. 13, 1978, abandoned. This application Dec. 5, 1980, Ser. No. 213,684

Claims priority, application United Kingdom, Nov. 14, 1977, 47352/77; Apr. 27, 1978, 16810/78; Sep. 4, 1978, 35436/78

Int. Cl.[3] **A61K** *31/545;* **C07D** *501/34*

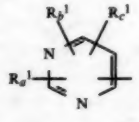
U.S. Cl. 424—246 **16 Claims**

1. A compound of the formula:



wherein

R^1 is a group of the formula:



in which

R_a^1 is hydrogen, amino or a protected amino group, R_b^1 and R_c^1 are each hydrogen, halogen, lower alkoxy, phenylthio, tolylthio, xylylthio, mesitylthio or naphthylthio,

R^2 is hydrogen or lower alkoxy,

R^3 is hydrogen or lower alkyl,

R^4 is hydrogen, halogen, carbamoyloxymethyl, lower alkyl, lower alkoxy, lower alkanoyloxymethyl or lower alkanoylthiomethyl,

R^5 is carboxy or a protected carboxy group, and

X is a group of the formula:

in which R^6 is hydrogen, lower alkyl, mono to trihalo (lower) alkyl, lower alkenyl, lower alkynyl, phenyl, tolyl, xylyl, cumenyl, naphthyl, phenyl (lower) alkyl, mono or dihalo (lower) alkanoyl, or lower alkoxy, and non-toxic, pharmaceutically acceptable salts thereof.

15. An anti-bacterial pharmaceutical composition comprising, as an active ingredient, an effective amount of the compound of claim **1**, in association with a non-toxic, pharmaceutically acceptable carrier or excipient.

4,395,412
7α-METHOXYCEPHALOSPORINS

Isamu Saikawa; Shuntaro Takano; Hiroyuki Imaizumi; Isamu Takakura; Hirokazu Ochiai; Takashi Yasuda; Hideo Taki; Masaru Tai, and Yutaka Kodama, all of Toyama, Japan, assignors to Toyama Chemical Co., Ltd., Tokyo, Japan

Division of Ser. No. 117,784, Feb. 1, 1980, Pat. No. 4,321,265, which is a continuation of Ser. No. 926,939, Jul. 21, 1978, abandoned. This application Dec. 31, 1980, Ser. No. 221,622

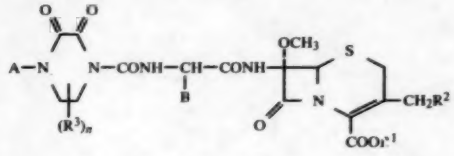
Claims priority, application Japan, Jul. 23, 1977, 52-88733; Feb. 2, 1978, 53-9869; Jun. 13, 1978, 53-70417

The portion of the term of this patent subsequent to Dec. 12, 1995, has been disclaimed.

Int. Cl.³ C07D *501/57;* **A61K** *31/545*

U.S. Cl. 424—246 **23 Claims**

1. A 7α-methoxy-cephalosporin or a salt thereof, said 7α-methoxy-cephalosporin being represented by the formula



wherein R^1 represents a hydrogen atom or a carboxyl-protecting group; R^2 represents a substituted or unsubstituted lower alkoxy, lower alkylthio, or C_{1-10} acyloxy group, the substituent of the substituted group being selected from halogen, lower alkyl, phenyl, C_{2-5} alkenyl, hydroxyl, lower alkoxy, lower alkylthio, nitro, cyano, lower alkylamino, di-lower alkylamino, C_{1-10} acylamino, C_{1-10} acyl, C_{1-10} acyloxy, C_{1-10} acyl-lower alkyl, carboxyl, carbamoyl, amino-lower alkyl, N-lower alkylamino-lower alkyl, N,N-di-lower alkylamino-lower alkyl, hydroxy-lower alkyl, hydroxyimino-lower alkyl, lower alkoxy-lower alkyl, carboxyl-lower alkyl, sulfo-lower alkyl, sulfo, sulfamoyl-lower alkyl, sulfamoyl, carbamoyl-lower alkyl, carbamoyl-C_{2-5} alkenyl, and N-hydroxycarbamoyl-lower alkyl; R^3 represents a lower alkyl group; n is 0, 1 or 2; A represents a hydrogen atom or a substituted or unsubstituted straight or branched chain C_{1-14} alkyl group, the substituent of the substituted group being selected from halogen, lower alkoxy, cyano, nitro, carboxyl, lower alkoxycarbonyl, lower alkylthio, and C_{1-10} acyl; and B represents a substituted or unsubstituted C_{5-6} cycloalkyl, C_{5-6} cycloalkenyl, C_{5-6} cycloalkadienyl or heterocyclic group, said heterocyclic group being composed of a 5 or 6 membered aromatic heterocyclic ring which is composed of carbon and at least one hetero atom selected from S, O and N, or of said aromatic heterocyclic ring fused to a benzene ring, the substituent of the substituted group being selected from halogen, lower alkyl, lower alkoxy, hydroxyl, C_{1-10} acyl, C_{1-10} acyloxy, mercapto, lower alkylthio, nitro, amino, protected amino, imino, protected imino, and carboxyl.

4,395,413
OXIME ETHERS AND PHARMACEUTICAL COMPOSITIONS CONTAINING THE SAME

Zoltán Budai; Aranka Lay née Kónya; Tibor Mezei; Lujza Petócz; Katalin Grasser; Ibolya Kosóczky; Enikó Szirt née Kiszelly, and Péter Görög, all of Budapest, Hungary, assignors to Egyt Gyogyszervegyeszeti Gyar, Budapest, Hungary

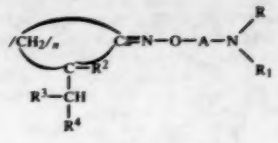
Filed Jun. 24, 1980, Ser. No. 162,674

Claims priority, application Hungary, Jul. 3, 1979, EE 2675

Int. Cl.³ A61K *31/15;* **C07D** *295/08*

U.S. Cl. 424—250 **7 Claims**

1. An oxime ether of the general formula /I/ or a pharmaceutically acceptable acid addition salt thereof,



/I/

wherein

A represents a C_{2-6} straight or branched alkylene chain, R and R^1 each represent a C_{1-6} alkyl group or they form together with the adjacent nitrogen atom a piperazinyl group optionally substituted with a C_{1-3} alkyl or benzyl group,

R^2 and R^3 each denote a hydrogen atom or together form a valency bond,

R^4 denotes a C_{1-10} alkyl or C_{2-10} alkenyl group, and n is 4 or 5.

4,395,414
SUBSTITUTED QUINOLINONE-ALKANECARBOXYLIC ACIDS AND MEDICAMENTS CONTAINING THEM, HAVING A HYPERGLYCAEMIC ACTION

Klaus Eistetter, Constance; Erich Rapp, Radolfzell, and Horst Wolf, Constance, all of Fed. Rep. of Germany, assignors to Byk Gulden Lomberg Chemische Fabrik Gesellschaft mit Beschränkter Haftung, Constance, Fed. Rep. of Germany

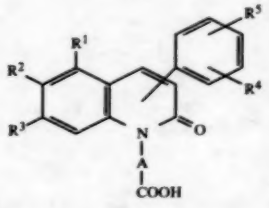
Filed Apr. 21, 1981, Ser. No. 256,247

Claims priority, application European Pat. Off., Aug. 14, 1980, 80104800.0

Int. Cl.³ A61K *31/47;* **C07D** *215/22*

U.S. Cl. 424—258 **8 Claims**

1. A substituted quinolinone of the general formula I



(I)

wherein

R^1, R^2 and R^3 are identical or different and each denotes a hydrogen atom, a halogen atom, a hydroxyl group, an alkoxy group with 1 to 4 carbon atoms, an amino group, a dialkylamino group, each alkyl radical having 1 to 4 carbon atoms, or a nitro group,

R^4 and R^5 are identical or different and each denotes a hydrogen atom, a halogen atom, an alkoxy group with 1 to 4 carbon atoms, a hydroxyl group, an amino group or a dialkylamino group, each alkyl radical having 1 to 4 carbon atoms, or

R^4 and R^5 together denote a methylenedioxy group bonded to two adjacent ring carbon atoms, and A denotes an alkylene group with 1 to 5 carbon atoms,

an ester thereof with an alkanol with 1 to 5 carbon atoms, or a salt thereof with an inorganic and organic base.

7. A hyperglycaemic pharmaceutical composition having pharmaceutically-acceptable inert carrier in admixture with an effective amount of a pharmaceutically-acceptable compound according to claim **1**, **2**, **3** or **4**.

4,395,415

N-OXO-PYRIDIN-2-YL-DITHIO-(4-NITRO-2-TRICHLOROMETHYLBENZENE) AND A FUNGICIDAL FORMULATION CONTAINING SAME

Helmut Hagen, Frankenthal; Hans Ziegler, Mutterstadt; Celia J. Mappes, Westheim, and Ernst-Heinrich Pommer, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Apr. 21, 1981, Ser. No. 256,128

Claims priority, application Fed. Rep. of Germany, May 16, 1980, 3018716

Int. Cl.[3] **C07D** *213/71;* **A61K** *31/44*

U.S. Cl. 424—263 **2 Claims**

1. N-Oxo-pyridin-2-yl-dithio-(4-nitro-2-trichloromethylbenzene).

2. A fungicidal formulation comprising a carrier and/or diluent and from 0.1 to 95 weight percent of the compound of claim 1.

4,395,416

1-SPIRO ISOBENZOFURANIC AND 1-SPIRO ISOBENZOTHIOPHENIC DERIVATIVES THE PROCESS FOR PREPARING THE SAME AND THEIR USE IN THERAPEUTICS

Michel Langlois, Buc; Bernard P. Bucher, Marnes la Coquette; Philippe L. Dostert, Paris; Alain P. Lacour, La Varenne, and Gerard H. Moinet, Orsay, all of France, assignors to Delalande S.A., Courbevoie, France

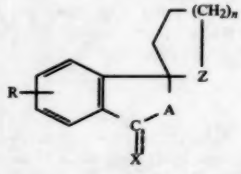
Filed Jan. 21, 1982, Ser. No. 341,415

Claims priority, application France, Jan. 29, 1981, 81 01692; Jan. 14, 1982, 81 00518

Int. Cl.[3] **A61K** *31/395;* **C07D** *491/07*

U.S. Cl. 424—267 **13 Claims**

1. A compound of the formula

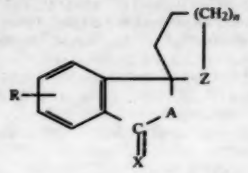


in which Z is >N—R_1 or —CH_2—, wherein R_1 is alkyl having 1 to 5 carbon atoms, phenyl or chlorophenyl, and in which

1. when
   Z is >N—R_1,
   n is 1 or 2,
   the pair (A, >C=====X) is selected from the group consisting of (S, C=O), (S, CH_2), (O, CH_2) and (O, CH—C_6H_5), and
   R is hydrogen, halogen, one or two methoxy groups or —CH=CH—CH=CH— connected to the 5 and 6 positions of the phenyl nucleus whereby to form a naphthyl nucleus, and
2. when
   Z is —CH_2—
   n is 1 or 2
   A is oxygen,
   >C=====X is >C=O or >C=S, and
   R is the same as defined above, with the provisos that
   (a) when >C=====X is >C=O, R is not hydrogen, and
   (b) when the pair (>C=====X, n) is (>C=O, 2), R is not 5—Br,

and the pharmacologically acceptable acid addition salts thereof when Z is >N—R_1.

13. An analgesic or anticonvulsant composition comprising a therapeutically effective amount of a compound of the formula



in which Z is >N—R_1 or —CH_2—, wherein R_1 is alkyl having 1 to 5 carbon atoms, phenyl or chlorophenyl, and in which

1. when
   Z is >N—R_1,
   n is 1, or 2,
   the pair (A, >C=====X) is selected from the group consisting of (S, C=O), (S, CH_2), (O, CH_2) and (O, CH—C_6H_5), and
   R is hydrogen, halogen, one or two methoxy groups or —CH=CH—CH=CH— connected to the 5 and 6 positions of the phenyl nucleus whereby to form a naphthyl nucleus, and
2. when
   Z is —CH_2—
   n is 1 or 2,
   A is oxygen,
   >C=====X is >C=O or >C=S, and
   R is the same as defined above,

and the pharmacologically acceptable acid addition salts thereof when Z is >N—R_1, in combination with a pharmaceutically acceptable vehicle.

4,395,417

ANTIHYPERLIPIDEMIC COMPOSITIONS

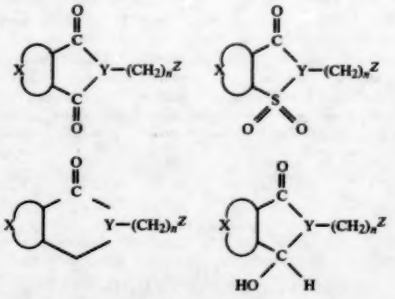
Iris Hall; George Cocolas, both of Chapel Hill, and James M. Chapman, Jr., Ashville, all of N.C., assignors to Research Corporation, New York, N.Y.

Filed Apr. 22, 1980, Ser. No. 142,678

Int. Cl.[3] **A61K** *31/045, 31/19, 31/12*

U.S. Cl. 424—270 **14 Claims**

1. Antihyperlipidemic compositions comprising a pharmaceutically acceptable carrier and, as the principal active ingredient, a compound of the group represented by the formulas:



wherein X is aryl, cycloalkyl, or cycloalkylene containing up to ten carbon atoms; Y is CH or N; Z is alkyl containing up to five carbon atoms, carboxyl, carboalkoxyl wherein the alkyl group contains up to four carbon atoms, acyl containing up to four carbon atoms, alkylene, aryl, aralkyl or aralhylene; n is 1 to 10; and further compounds wherein the group represented by X is replaced with at least one hydrogen on each of the carbon atoms adjacent the oxygen bearing functional groups and pharmaceutically acceptable acid; and alkali metal addition salts thereof.

4,395,418

PENEM-3-CARBOXYLIC ACID DERIVATIVES

Eiji Ohki; Sadao Oida; Akira Yoshida; Teruo Hayashi, and Shinichi Sugawara, all of Hiromachi, Japan, assignors to Sankyo Company Limited, Tokyo, Japan

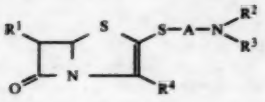
Filed Jun. 5, 1981, Ser. No. 271,010

Claims priority, application Japan, Jun. 6, 1980, 55-76128; Jun. 23, 1980, 55-84981

Int. Cl.³ A61K *31/425;* C07D *499/00*

U.S. Cl. 424—270 8 Claims

1. Compounds of formula (I):



(I)

wherein:

R^1 represents a 1-hydroxyethyl group;

R^2 represents a hydrogen atom or a C_1–C_2 alkyl group;

R^3 represents a hydrogen atom, a formimidoyl group, or an acetimidoyl group;

A represents an ethylene or trimethylene group having one methyl group in the α-position in its carbon chain; and

R^4 represents a carboxy group or a pivaloyloxymethoxycarbonyl group; and pharmaceutically acceptable salts thereof.

4,395,419

PHARMACOLOGICALLY ACTIVE COMPOUNDS

Graham J. Durant; Charon R. Ganellin, both of Welwyn Garden City, and Rodney C. Young, Bengeo, all of England, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

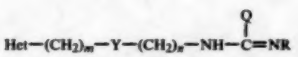
Division of Ser. No. 65,478, Aug. 10, 1979, Pat. No. 4,308,275, which is a division of Ser. No. 914,329, Jun. 12, 1978, Pat. No. 4,189,488, which is a division of Ser. No. 773,590, Mar. 2, 1977, Pat. No. 4,118,502. This application Aug. 10, 1981, Ser. No. 291,196

Claims priority, application United Kingdom, Mar. 11, 1976, 9750/76

Int. Cl.³ A61K *31/425;* C07D *285/10, 285/12*

U.S. Cl. 424—270 10 Claims

1. A compound of the formula



wherein Het is a thiadiazole ring, which ring is optionally substituted by lower alkyl, halogen, lower alkoxy, hydroxy, trifluoromethyl, hydroxymethyl or amino; m is 0, 1 or 2 and n is 2 or 3 provided that the sum of m and n is 3 or 4; Y is sulphur, methylene or oxygen; R is hydrogen, lower alkyl or Het—$(CH_2)_m$—Y—$(CH_2)_n$— where Het, m, n and Y are as defined above; Q is —CO_2H or —SO_2H; or a pharmaceutically acceptable acid addition salt thereof.

9. A method of blocking histamine H_2-receptors which comprises administering to an animal in need thereof in an effective amount to block said receptors a compound of claim 1.

4,395,420

METHOD AND COMPOSITION FOR TREATING PRURITIS

Joel E. Bernstein, 615 Brierhill Rd., Deerfield, Ill. 60015

Filed Dec. 9, 1981, Ser. No. 328,955

Int. Cl.³ A61K *31/02, 31/33, 31/135, 31/335*

U.S. Cl. 424—278 16 Claims

1. A method of treating pruritis in humans in need of such treatment comprising topically applying a therapeutically effective amount of doxepin or a physiologically acceptable acid addition salt thereof.

4,395,421

DISODIUM CROMOGLYCATE FORMULATIONS

James E. Taylor, Loughborough, and Neil A. Stevenson, Nanpantan, both of England, assignors to Fisons Limited, Ipswich, England

Continuation of Ser. No. 830,617, Sep. 6, 1977, abandoned. This application Aug. 16, 1979, Ser. No. 67,104

Claims priority, application United Kingdom, Oct. 16, 1976, 43054/76

Int. Cl.³ A61K *31/35*

U.S. Cl. 424—283 14 Claims

1. Disodium cromoglycate produced by wet granulation in a form having a bulk density of from 0.34 to 0.7 g per ml. and containing less than 5% by weight of any other compound, with the exception of water.

4,395,422

SPRAY DRIED VITAMIN E POWDER

Douglass N. Schmidt, Grosse Ile, Mich., and Frank Fischetti, Jr., Flushing, N.Y., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Apr. 6, 1981, Ser. No. 251,076

Int. Cl.³ A01N *43/16*

U.S. Cl. 424—284 8 Claims

1. A vitamin E powder suitable for the preparation of direct compression vitamin tablets comprising 20 to 60 percent by weight Vitamin E, 0.5 to 2.0 percent by weight silicon dioxide having a particle size of 1 millimicron to 1 micron, 1 to 25 percent by weight hydrolyzed gelatin, and about 20 to 30 percent by weight caseinate, with the proviso that the weight ratio of caseinate to gelatin be greater than 1:1 all weight based on the total weight of powder.

4,395,423

POLYCYCLIC CYANOKETONES

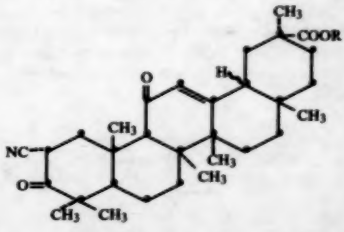
Helmut C. Neumann, East Greenbush, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

Continuation of Ser. No. 950,254, Oct. 10, 1978, abandoned. This application Dec. 6, 1979, Ser. No. 100,983

Int. Cl.³ C07C *121/48;* A61K *31/275*

U.S. Cl. 424—304 2 Claims

1. A composition for the prevention and/or healing of gastric or intestinal ulcers in a mammal which comprises a therapeutically effective amount of a compound having the formula



wherein R is hydrogen or lower-alkyl of one to three carbon atoms; a 3-lower-alkanoyl enol ester thereof wherein lower-alkanoyl has from two to four carbon atoms; or an alkali metal salt thereof incorporated in a pharmaceutical carrier suitable for oral administration.

4,395,424

COSMETIC COMPOSITION AND METHOD OF MAKING THE SAME

Ruby G. Veney, 4520 Pine St., Philadelphia, Pa. 19143

Continuation-in-part of Ser. No. 21,551, Mar. 19, 1979, Pat. No. 4,255,452. This application Feb. 23, 1981, Ser. No. 236,989
The portion of the term of this patent subsequent to Mar. 10, 1998, has been disclaimed.
Int. Cl.³ A61K 47/00
U.S. Cl. 424—359 3 Claims

1. A composition for topical application to the body consisting essentially of a mixture of about 25 to 35 parts by weight, non-fat dry milk solids, about 15 to 25 parts by weight witch hazel, about 35 to 45 parts by weight olive oil, about 150 to 200 parts by weight water and about 1 to 2 parts by weight polyoxyethylene having a hydroxyl number of from about 40 to about 60 .

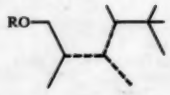
4,395,425

USE OF PRINS REACTION PRODUCTS OF DIISOAMYLENE DERIVATIVES TO AUGMENT OR ENHANCE THE AROMA OR TASTE OF FOODSTUFFS

Richard M. Boden, Monmouth Beach, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.

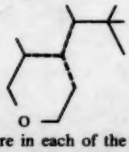
Division of Ser. No. 267,850, May 28, 1981, Pat. No. 4,359,412. This application Jun. 24, 1982, Ser. No. 391,588
Int. Cl.³ A23L 1/226
U.S. Cl. 426—3 8 Claims

1. A process for augmenting or enhancing the aroma or taste of a foodstuff or chewing gum comprising the step of adding to said footstuff or chewing gum from about 0.2 parts per million up to about 150 parts per million based on total foodstuff composition or chewing gum composition of a mixture of compounds defined according to the structure:



wherein R represents hydrogen or C_2–C_4 acyl and wherein in each of the compounds of the mixture, one of the dashed lines is a carbon-carbon double bond and each of the other of the dashed lines are carbon-carbon single bonds.

6. A process for augmenting or enhancing the aroma or taste of a foodstuff or chewing gum composition comprising the step of adding to said foodstuff or chewing gum composition from about 0.2 parts per million up to about 150 parts per million based on total food composition or a chewing gum composition of a mixture of compounds defined according to the structure:



wherein in the mixture in each of the molecules one of the dashed lines represents a carbon-carbon double bond and each of the other of the dashed lines represent carbon-carbon single bonds.

4,395,426

DRY MIX FOR BREAD

Steve T. Fan, Maple Grove, Minn., assignor to General Mills, Inc., Minneapolis, Minn.

Filed Jul. 27, 1981, Ser. No. 287,457
Int. Cl.³ A21D 10/00
U.S. Cl. 426—62 7 Claims

1. A dry mix for preparing bread without requiring a kneading step, said mix comprising:

A. flour having an average vital gluten content of at least about 8% by weight;

B. about 2 parts to 10 parts by weight of active dry yeast per 100 parts flour;

C. about 1 part to 10 parts by weight of a chemical leavening agent per 100 parts flour;

D. 0.5 to 1.5 parts by weight per 100 parts of flour of a propylene glycol alginate; and

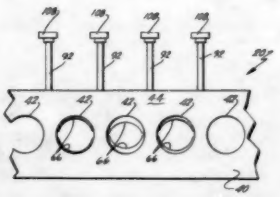
E. about 2 parts to 10 parts of a gum member by weight per 100 parts flour selected from the group consisting of karaya gum, guar gum, xanthan gum, high viscosity carboxymethyl cellulose, high viscosity carrageenan gum, and mixtures thereof.

4,395,427

METHOD AND APPARATUS FOR DEPOSITING DOUGH ON A CONVEYOR

Harry A. Fischer, Ada; Paul J. Koepnick, Grand Rapids; Thomas A. Dennis, Nunica, and Joseph R. Anderson, Ada, all of Mich., assignors to Werner Lehara, Inc., Grand Rapids, Mich.

Filed May 12, 1981, Ser. No. 262,999
Int. Cl.³ A23P 1/00; B29F 3/04
U.S. Cl. 426—231 23 Claims



1. A method of dispensing food product mix onto a conveyor or the like to make shaped food products, said method comprising the steps of:

depositing a quantity of mix into a hopper, said hopper being of the type having a plurality of discharge apertures and a plurality of dies, each supported at one of said apertures;

forcing the mix through said apertures and into said dies;

severing the mix to form a shaped product which is deposited on the conveyor;

monitoring the flow of mix through said dies and the food product shapes; and

varying the flow area at selected ones of said apertures in a balanced, uniform fashion from complementary portions of the periphery of said selected ones of said apertures so that the weight of the food product shapes deposited onto the conveyor is maintained substantially the same from each of said dies.

4,395,428

PROCESS FOR PREPARING COOKED MEAT HAVING REDUCED LEVELS OF N-NITROSAMINES

Richard F. Theiler, Scottsdale, Ariz., assignor to Armour and Company, Phoenix, Ariz.

Filed Jul. 27, 1981, Ser. No. 286,743
Int. Cl.³ A23B 4/02, 4/14
U.S. Cl. 426—266 17 Claims

1. A process for preparing a cured meat product which, when cooked for consumption, contains substantially reduced levels of N-nitrosamines, comprising the steps of introducing into uncured meat a nitrite-containing curing composition, a tocopherol, and an inhibitor substance selected from the group consisting of preneutralized liquid smoke, buffered liquid smoke, reducing sugar, and mixtures thereof, and processing said meat to effect curing.

4,395,429

EXPANDABLE FOOD COMPOSITION

Jean-Claude Campagne, and Guy Frappier, both of Melle, France, assignors to Rhone-Poulenc Industries, Paris, France

Filed Mar. 23, 1981, Ser. No. 246,158
Claims priority, application France, Mar. 21, 1980, 80 06305
Int. Cl.³ A23J 3/02; A23G 9/04; A23C 9/154
U.S. Cl. 426—271 29 Claims

1. A storage-stable composition of matter comprising: (i) a purified, undenatured lactoserum protein fraction obtained by extracting lactoserum first with at least one anion exchange resion and then with silica, or by extracting lactoserum first with silica and then with at least one anion exchange resin, the lactoserum being contacted with said anion exchange resin at a pH between about 4 and about 7.5 and at a temperature between about 0° and about 50° C., whereby protein becomes fixed to said anion exchange resin and to the silica, and then eluting the fixed protein from the anion exchange resin and from the silica, said anion exchange resin comprising a support of alumina or silica, coated with less than 20 mg/m² of a cross-linked polymer film bearing tertiary amine functional groups or quarternary ammonium salts having the general formulae

$$-CH_2-\underset{\underset{R}{|}}{N}-CH_2- \text{ or } -CH_2-N^{(+)}-(R)_3X^{(-)},$$

wherein each R, which may be identical or different, represents an alkyl or hydroxyalkyl radical having 1 to 4 carbon atoms and X is a mineral or organic anion, said silica and said support having a grain size between about 4 μm and 5 mm, a specific surface of about 5 to 150 m²/g, a pore volume of about 0.4 to 2 cm³/g and a pore diameter between about 250 and 2500 A; and (ii) a Xanthomonas hydrophilic colloid; sufficient amounts of (i) and (ii) being present such that said composition is capable of being whipped to form a stable edible food substrate.

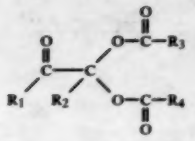
4,395,430

DIKETONE GENERATORS

Brian Byrne, Hamburg, and Robert S. DeSimone, Oakland, both of N.J., assignors to Hercules Incorporated, Wilmington, Del.

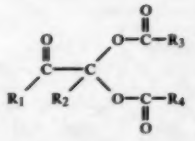
Filed Jun. 24, 1981, Ser. No. 276,630
Int. Cl.³ C07C 69/76, 67/02; C09F 5/08; A23L 1/226
U.S. Cl. 426—534 15 Claims

1. An alpha-keto diacyloxy compound having the structural formula



wherein R_1 and R_2 are methyl radicals or one of them is a methyl radical and the other is an ethyl radical and R_3 and R_4 are the same or different C_1 to C_{18} alkyl radicals.

6. A method of imparting or enhancing the effect of a vicinal diketone in a foodstuff of which said vicinal diketone forms an essential element of the flavor or aroma, which method comprises incorporating into said foodstuff, prior to cooking, about 1 to 2000 ppm by weight of an alpha-keto diacyloxy compound having the structural formula



wherein R_1 and R_2 are methyl radicals or one of them is a methyl radical and the other is an ethyl radical and R_3 and R_4 are the same or different C_1 to C_{18} alkyl radicals, whereby said vicinal diketone is generated substantially continuously during the cooking cycle.

4,395,431

PROCESSING OF HOP RESINS AND SIMILAR MATERIALS

David G. Lance, St. Andrews, and Raymond N. Skinner, Greensborough, both of Australia, assignors to Carlton and United Breweries Limited, Carlton, Australia

Filed May 14, 1980, Ser. No. 149,566
Claims priority, application Australia, May 15, 1979, PD8792; Jan. 22, 1980, PE2085
Int. Cl.³ C12C 9/02
U.S. Cl. 426—600 7 Claims

1. A method for producing a hop resin product comprising the steps of:

contacting an inert hydrophobic support with a solvent-free two phase system comprising a hop resin extract and an aqueous phase to effect coating of said resin onto said support, and

separating the resin-coated support from said system.

4,395,432

β-ALUMINA COATING

Frank D. Rizzelli, and Kimon Papadopoulos, both of Pittsburgh, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 16, 1981, Ser. No. 331,107
Int. Cl.³ B05D 1/08, 5/12
U.S. Cl. 427—34 10 Claims

1. A method of coating a substrate with β-alumina, a compound of alumina and an alkali metal oxide, comprising:

(1) forming a powdered mixture of about 80 to about 95% by weight β-alumina and about 5 to about 20% by weight of a carbonate of an alkali metal; and

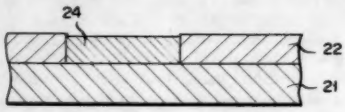
(2) spraying said powdered mixture through a source of heat sufficient to melt it, and onto said substrate.

4,395,433

METHOD FOR MANUFACTURING A SEMICONDUCTOR DEVICE HAVING REGIONS OF DIFFERENT THERMAL CONDUCTIVITY

Yoshihide Nagakubo, and Susumu Kohyama, both of Kawasaki, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Nov. 18, 1980, Ser. No. 207,934
Claims priority, application Japan, Nov. 22, 1979, 54-150731
Int. Cl.³ H01L 21/26, 21/268
U.S. Cl. 427—35 10 Claims



1. In a method for manufacturing a semiconductor device, the process comprising the steps of:

a. forming an insulating film on selected portions of a semiconductor substrate; and

b. tending to accumulate polysilicon on the entire surface of the insulating film and the exposed portions of the semiconductor substrate simultaneous with or followed by exposing said polysilicon to an energy beam, whereby the polysilicon tending to accumulate on the exposed portions of the semiconductor substrate is crystallized to silicon and the polysilicon tending to accumulate on the surface of the insulating film is not crystallized but scattered by the energy beam.

4,395,434

METHOD FOR IMPROVING SURFACE PROPERTIES OF SHAPED ARTICLES OF SYNTHETIC RESINS

Kiyoshi Imada, Omiya; Susumu Ueno, and Hirokazu Nomura, both of Ibaraki, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Sep. 14, 1981, Ser. No. 301,536
Claims priority, application Japan, Sep. 16, 1980, 55-128093; Sep. 16, 1980, 55-128094
Int. Cl.³ B05D 3/04; B08B 17/02
U.S. Cl. 427—38 10 Claims

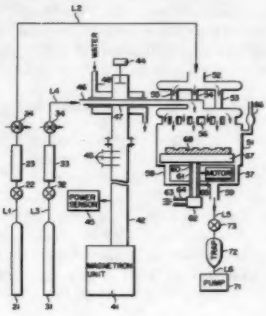
1. A method for modifying the surface properties of a shaped article of a synthetic resin which comprises exposing the surface of the shaped article to a low temperature plasma generated in a gaseous atmosphere containing a nitrogen-containing organic compound selected from the group consisting of organic amine compounds represented by the general formula R^1-NR^2_2, in which R^1 is a monovalent hydrocarbon group and R^2 is a hydrogen atom or a monovalent hydrocarbon group, organic acid amide compounds represented by the general formula R^3-CO-NR^4_2, in which R^3 is a monovalent hydrocarbon group and R^4 is a hydrogen atom or a monovalent hydrocarbon group, organic diamine compounds represented by the general formula R^5_2N-R^6-NR^7_2, in which R^5 and R^7 are each a hydrogen atom or a monovalent hydrocarbon group and R^6 is a divalent hydrocarbon group and heterocyclic organic compounds having at least one nitrogen atom in a molecule as the ring member, at a pressure in the range from 0.001 to 10 Torr, and then contacting the compound with a halogen or a halogen-containing compound.

4,395,435

METHOD FOR MANUFACTURING INFORMATION RECORDING MEDIUM

Hideo Sanpei, Hiratsuka; Kunio Matsuno, Yokosuka; Shyoji Hirano, and Katuya Kumagai, both of Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 5, 1982, Ser. No. 355,114
Claims priority, application Japan, Mar. 11, 1981, 56-34837
Int. Cl.³ C11B 23/00
U.S. Cl. 427—38 12 Claims



1. A method for manufacturing an information recording medium, comprising:

placing, in a reaction region, a target on a surface of which is recorded information in a form of an indented pattern and the surface of which exhibits electrical conductivity;

introducing a plasma generating gas into a plasma generating region isolated from said reaction region, activating the plasma generating gas by microwaves to generate a plasma; and

introducing the plasma from said plasma generating region and an organic monomer into said reaction region independently of each other to initiate polymerization of the organic monomer, thereby forming a dielectric layer of a polymer of the monomer and of a uniform, small thickness along the indented pattern of said target.

4,395,436

PROCESS FOR PREPARING ELECTROCHEMICAL MATERIAL

Giuseppe Bianchi; Antonio Nidola, and Gian N. Martelli, all of Milan, Italy, assignors to Oronzio de Nora Impianti Elettrochimici S.p.A., Milan, Italy

Filed Nov. 14, 1980, Ser. No. 206,746
Claims priority, application Italy, Dec. 20, 1979, 28250 A/79
Int. Cl.³ B05D 5/12
U.S. Cl. 427—53.1 51 Claims

1. In a process of preparing an electrode comprising a valve metal substrate and an electroconductive metal coating by applying a compound of said metal capable of decomposing to said substrate and decomposing said coating by heating to form said electroconductive coating, the improvement which com-

prises subjecting said coating to localized high intensive heat sufficient to decompose said compound while maintaining at least a portion of the substrate at a lower temperature than that of said coating to quench cool the coating and wherein the bulk of the substrate and the atmosphere surrounding the coating are maintained at a lower temperature than that of said coating during the localized high intensive heat.

20. A process for preparing homogeneous phases of oxides of at least two different metals wherein a mixture of thermally reducible salts of said metals is subjected to localized heating in an oxidizing atmosphere to a temperature above the decomposition temperature of the reducible salts by means of a scanning laser beam and the oxides are cooled to below 350° C. within 100 seconds or less from the instant of the application of the heat.

4,395,437

METHOD OF FORMING A SECONDARY EMISSIVE COATING ON A DYNODE

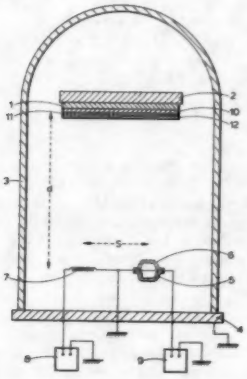
Alan G. Knapp, Crawley, England, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 135,965, Mar. 31, 1980, abandoned. This application Jul. 27, 1981, Ser. No. 286,906

Claims priority, application United Kingdom, Apr. 2, 1979, 7911400; Mar. 13, 1980, 8008511

Int. Cl.³ B05D *5/12*

U.S. Cl. 427—78 **13 Claims**



6. A method of forming a secondary emissive coating on a dynode, said method comprising the steps of:

vapor depositing a composite coating of magnesium and aluminum onto the dynode;

vapor depositing a coating of aluminum over the composite coating;

oxidizing the exposed aluminum layer; and

activating the coated dynode by heating it in an oxygen atmosphere until at least part of the magnesium diffuses through the oxidized aluminum coating and becomes oxidized.

4,395,438

LOW PRESSURE CHEMICAL VAPOR DEPOSITION OF SILICON NITRIDE FILMS

Ping-Wang Chiang, Los Gatos, Calif., assignor to Amdahl Corporation, Sunnyvale, Calif.

Continuation of Ser. No. 185,294, Sep. 8, 1980, abandoned. This application Dec. 6, 1982, Ser. No. 447,464

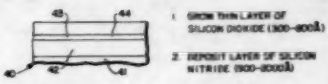
Int. Cl.³ B05D *5/12*; H01L *7/44*; B44C *1/22*; C03C *15/00*

U.S. Cl. 427—94 **10 Claims**

1. In a process for forming on a semiconductor wafer a high quality layer of silicon nitride adapted to be patterned and to serve as a mask for diffusion or implantation of selected impurities into selected regions of said wafer, the steps of:

disposing said wafer in a closed reaction chamber evacuated to a pressure less than about 1 Torr and heated to an elevated temperature in the range of about 650 to 900 degrees Centigrade;

supplying to the interior of said chamber a gaseous mixture comprising primarily ammonia and a silicon compound



adapted to react together with said ammonia at said elevated temperature gradually to deposit said layer of silicon nitride on said wafer at a deposition rate greater than approximately 50 Angstroms per minute, said silicon compound having a flow rate of greater than approximately 12 cubic centimeters per minute, said ammonia and said selected silicon compound having a ratio of relative concentrations in said mixture preselected to be in the range of 4:1 and 20:1.

4,395,439

METHOD OF MANUFACTURING MAGNETIC RECORDING MEDIUM

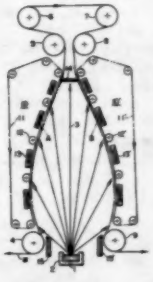
Tatsuji Kitamoto, and Ryuji Shirahata, both of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 19, 1981, Ser. No. 265,123

Claims priority, application Japan, May 20, 1980, 55-66877

Int. Cl.³ H01F *10/02*

U.S. Cl. 427—132 **13 Claims**



1. A method of manufacturing a magnetic recording medium comprising the steps of: evaporating molten metal from a metal evaporating source; and transporting a flexible belt-shaped support above said evaporating source at a substantially constant speed along a curved path forward such that evaporated metal flow lines connecting a central point on an evaporation surface of said molten metal to said support from a substantially constant angle of incidence with respect to a longitudinal direction of said support throughout an area where said evaporated metal flow lines contact said support.

4,395,440
METHOD OF AND APPARATUS FOR MANUFACTURING ULTRAFINE PARTICLE FILM

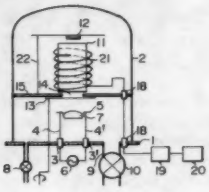
Atsushi Abe, Ikoma; Hisahito Ogawa, Nara, and Masahiro Nishikawa, Amagasaki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 6, 1981, Ser. No. 309,088

Claims priority, application Japan, Oct. 9, 1980, 55-141218; Oct. 9, 1980, 55-141219

Int. Cl.³ B05D 1/12; C23C 11/00

U.S. Cl. 427—180 **6 Claims**



1. A method of manufacturing an ultrafine particle film comprising the steps of:

continuously supplying a gas into a vessel containing a cylinder, an evaporation source and a substrate;

arranging said substrate and said evaporation source so that they oppose each other through said cylinder in the axial direction of said cylinder;

continuously discharging the supplied gas from said vessel, thereby forming an atmospheric system within said vessel, said atmospheric system having a reduced gas pressure in the range of greater than approximately 10^{-1} Torr to approximately 10 Torr and a forced unidirectional flow of the gas from said evaporation source towards said substrate;

said evaporation source producing evaporated matter;

conveying said evaporated matter from said evaporation source to said substrate, after a steady evaporation rate is obtained, by means of said forced flow of gas; and

said evaporated matter and said gas interacting to form ultrafine particles, whereby said ultrafine particles are deposited on said substrate to form said ultrafine particle film.

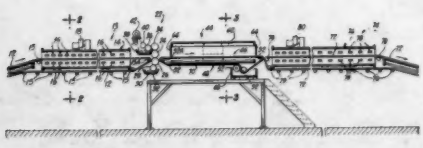
4,395,441
METHOD OF COATING LIQUID PENETRABLE ARTICLES WITH POLYMERIC DISPERSIONS

Robert G. Farnam, 1230 N. Western Ave., Lake Forest, Ill. 60045

Continuation of Ser. No. 14,991, Feb. 26, 1979, abandoned, which is a continuation-in-part of Ser. No. 933,893, Aug. 15, 1978, abandoned. This application Jul. 22, 1981, Ser. No. 285,860

Int. Cl.³ B05D 3/06

U.S. Cl. 427—211 **38 Claims**



1. A method of coating a liquid-penetrable material with a liquid dispersion of a polymer, comprising:

preheating said liquid-penetrable material to a temperature sufficient to prevent any substantial penetration of liquid into said material when said material, at said preheated temperature, is contacted with a liquid dispersion of a polymer;

coating a major surface of said preheated material while at said temperature with a liquid dispersion of a curable polymer;

supporting the coated, liquid-penetrable material on a plurality of elastomeric elongated support members while said coating is dried to a substantially tack-free condition; and

curing said coating to form a polymer-coated article.

4,395,442
METHOD OF COATING THE WORKING SURFACES OF PISTON OPERATING DEVICES

Gunther Meise, Hanover, and Herbert Unger, Springe, both of Fed. Rep. of Germany, assignors to Wabco Fahrzeugbremsen GmbH, Hanover, Fed. Rep. of Germany

Filed Dec. 4, 1981, Ser. No. 327,338

Claims priority, application Fed. Rep. of Germany, Dec. 19, 1980, 3047978

Int. Cl.³ B05D 7/22

U.S. Cl. 427—236 **5 Claims**

1. A process of protecting the mating surfaces of a piston type of machine including the steps of: coating at least one of the mating surfaces of the piston-cylinder members by spraying under pressure a varnish having an epoxy-resin base in which is mixed a ceramic oxide material which contains sintered aluminum oxide and zirconium oxide, placing the varnish coated member in an oven, and heating the varnish coated member at a given temperature for a given period of time to result in a hardened wear-resistant surface finish.

4,395,443
METHOD OF FORMING SILICONE FILMS

Chiyuki Shimizu, and Kiyoshi Hosokowa, both of Ohta, Japan, assignors to Toshiba Silicones, Ltd., Japan

Filed May 7, 1981, Ser. No. 262,272

Claims priority, application Japan, May 9, 1980, 55-61502

Int. Cl.³ A23F 3/00

U.S. Cl. 427—387 **16 Claims**

1. A method of forming dust-resistant films which comprises coating on the surface of a silicone elastomer a composition formed by dissolving (1) a condensation reaction product between (A) 100 parts by weight of a benzene-soluble polyorganosiloxane consisting essentially of SiO_2 units and $R_3^1SiO_{\frac{1}{2}}$ units, in which groups R^1, which may be the same or different, stand for a substituted or unsubstituted monovalent hydrocarbon group, wherein the amount of the $R_3^1SiO_{\frac{1}{2}}$ units is 0.4 to 1.0 mole per mole of the SiO_2 units and a reactive group selected from hydroxyl and alkoxy groups is bonded to the silicon atom in an amount of 0.0004 to 1 per silicon atom; and (B) 20 to 200 parts by weight of a silanol-terminated polydiorganosiloxane having a viscosity of 10,000 to 2,000,000 cSt as measured at 25° C., in (2) a mixed solvent comprising (a) a volatile organosilicon compound having a boiling point of 70° to 250° C. as measured under atmospheric pressure and being represented by the molecular formula:

R_4^2Si,

$R_3^3Sio[R_2^4SiO]_mSiR_3^3$,

$R^5Si[OSiR_3^6]_3$ or

$[R_2^7SiO]_n$, in which R^2 through R^7, which may be the same or different, stand for a hydrogen atom or an alkyl group, m is 0 or a positive number and n is a positive number, and (b) a hydrocarbon solvent, the amount of the volatile organosilicon compound (a) being at least 5% by weight based on the total amount of the organosilicon compound (a) and the hydrocarbon solvent (b); and drying and curing the coated composition.

4,395,444

THERMOSETTING CATIONIC ACRYLIC LATEX COMPOSITIONS CONTAINING BLOCKED ISOCYANATES

Suryya K. Das, Pittsburgh, and Charles M. Kania, Tarentum, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Sep. 25, 1981, Ser. No. 305,566
Int. Cl.³ B05D 3/02
U.S. Cl. 427—388.4 7 Claims

1. A stable thermosetting cationic acrylic latex composition, comprising a blocked isocyanate curing agent and a cationic acrylic latex; the cationic acrylic latex is prepared by a process which comprises copolymerizing in an acidic medium, in the presence of a cationic surfactant, ethylenically unsaturated monomers, at least one of which contains an active hydrogen group; the cationic surfactant comprises a gegen-ion derived from an aliphatic or aromatic sulfonic acid selected from the group consisting of methanesulfonic acid, ethanesulfonic acid, propanesulfonic acid, benzenesulfonic acid, toluenesulfonic acid, phenolsulfonic acid and cresolsulfonic acid.

4,395,445

COATING AND PRIMER FORMULATION ON THE BASIS OF A COPOLYMER OF TETRAFLUOROETHYLENE AND A PERFLUORO-(ALKYLVINYL) ETHER, AND USE THEREOF

Gerhard Gebauer, and Franz Mayer, both of Burgkirchen, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Continuation of Ser. No. 122,591, Feb. 19, 1980, abandoned. This application Sep. 10, 1981, Ser. No. 300,900
Int. Cl.³ B05D 1/36
U.S. Cl. 427—407.1 4 Claims

1. A method for improving the coating of a substrate with a fluoropolymer which comprises applying a primer composition and subsequently without an intermediate heat treatment for sintering applying a topcoat of a tetrafluoroethylene homopolymer or copolymer wherein the improvement comprises applying a primer composition consisting essentially of

(a) from 100 to 20 weight %, relative to the total polymer solids of the components (a) and (b), of a copolymer of copolymerized tetrafluoroethylene units; from 0.5 to 11 weight % of copolymerized units of a perfluoro(alkylvinyl) ether of the formula CF_2=CF—OR, in which R is a perfluoroalkyl radical having from 1 to 10 carbon atoms; and from 0 to 12 weight % of copolymerized units of hexafluoropropylene or vinylidene fluoride, each relative to the total weight of the copolymer;

(b) from 0 to 80 weight %, relative to the total polymer solids of components (a) and (b), of dispersed polytetrafluoroethylene particles having a mean grain size of from 0.05 to 30 μm;

(c) from 10 to 70 weight % of the weight sum of (a) plus (b) plus (c) of lithium hydroxide and suspended, fine-particle SiO_2 produced by thermal treatment; the molar ratio LiOH: SiO_2 being from 1:0.5 to 1:30; and

(d) water as liquid carrier.

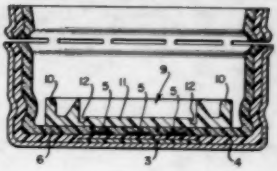
4,395,446

PEELABLE ADHESIVE STRUCTURE

Go Kunimoto, Chigasaki; Isao Ichinose, Hiratsuka; Noboru Suzuki, Fujisawa, and Fumio Mori, Yokohama, all of Japan, assignors to Toyo Seikan Kaisha, Ltd., Tokyo, Japan

Continuation of Ser. No. 94,570, Nov. 15, 1979, abandoned. This application Mar. 22, 1982, Ser. No. 360,368
Claims priority, application Japan, Nov. 17, 1978, 53-141065
Int. Cl.³ B32B 15/08
U.S. Cl. 428—35 10 Claims

1. A peelable adhesive structure comprising a plurality of parts, at least one of which is made of metal, adhering together by means of a coating, chracterized in that said coating has a peelable surface formed between a first layer of an acid-denatured hydrocarbon resin composition having an acid value of from 0.1 to 20 and a second layer containing an epoxy resin, said denatured hydrocarbon resin being obtained from the reaction between (A) a hydrocarbon resin precursor selected



from the group consisting of (i) petroleum resins which are obtained by polymerization of cyclopentadiene or C_9 to C_{11} olefin hydrocarbons, (ii) cumarone-indene resins and (iii) terpene resins, and (B) an ethylenically unsaturated carboxylic acid or its anhydride.

4,395,447

MEDIUM FOR RECORDING

Yoshiro Nakamatsu, 1-10-309, Minami Aoyama 5-chome, Minato-ku, Tokyo, Japan

Filed Apr. 22, 1981, Ser. No. 256,316
Claims priority, application Japan, May 8, 1980, 55-59984
Int. Cl.³ B32B 3/02
U.S. Cl. 428—66 3 Claims

1. A recording medium comprising:

(a) a recording disc,

(b) a magnetic coating on said disc and with said coating having a thickness which decreases from a maximum to a minimum radially inwardly from the outer periphery toward the center of said disc to provide correspondingly increasing recording density from the outer periphery toward the center of said disc, said coating containing magnetic particles,

(c) said magnetic particles being oriented relative to the surface of said disc generally inversely to the change in thickness of said coating and being essentially non-oriented at the periphery of said disc in the area of maximum coating thickness and increasing in orientation radially inwardly toward the center of said disc to a maximum uniform orientation in the area of minimum coating thickness, to thereby provide an essentially constant output for the recording medium from the disc periphery radially inwardly to the inner termination of said magnetic coating.

4,395,448

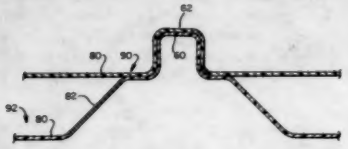
FILLING SHEET ATTACHING MEANS FOR GAS AND LIQUID CONTACT APPARATUS AND METHOD OF ASSEMBLY OF PLURAL PARALLEL FILLING SHEETS

Marcel R. Lefevre, Branchburg, and Anthony M. DePalma, South Plainfield, N.J., assignors to Research-Cottrell, Inc., Somerville, N.J.

Filed Dec. 22, 1981, Ser. No. 333,409
Int. Cl.³ B32B 3/06
U.S. Cl. 428—99 3 Claims

1. Filling sheets for a gas and liquid contact apparatus comprising a plurality of identical sheet members, each of said sheet members having a plurality of male type and female type locking tabs, said tabs being positioned in rows and columns

and male type tabs in any row or column being adjacent a female type tab whereby rotation of alternate sheets 180° bring



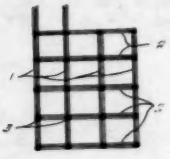
the male and female type tabs of said alternate sheets into alignment.

4,395,449

PREFORMS FOR REINFORCEMENT OF BATTERY GRIDS

Joseph J. Duffy, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 21, 1982, Ser. No. 390,537
Int. Cl.³ B32B *5/12*
U.S. Cl. 428—105 **7 Claims**



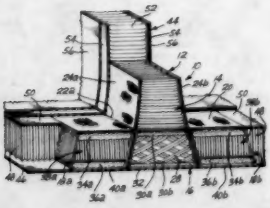
1. A network sheet preform comprising an array of spaced bundles of inorganic filaments superimposed upon and directionally displaced from another array of spaced bundles of inorganic filaments, said arrays being bonded to each other at filament bundle crossover points through bonds of a fugitive binder having a melting point of at least about 0° C. and a boiling point below about 300° C.

4,395,450

COMPOSITE STRUCTURAL SKIN SPAR JOINT AND METHOD OF MAKING

Philip C. Whitener, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

PCT No. PCT/US81/01319, § 371 Date Sep. 30, 1981, § 102(e) Date Sep. 30, 1981, PCT Pub. No. WO83/01238, PCT Pub. Date Apr. 14, 1983
PCT Filed Sep. 30, 1981, Ser. No. 333,247
Int. Cl.³ B64C *3/18*; B32B *5/00*
U.S. Cl. 428—116 **16 Claims**



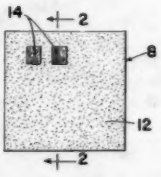
10. A composite wing spar joint comprising: a resin impregnated woven fabric having two spaced apart panels to extend the length of span and an intersecting panel that extends between, becomes interwoven with, and extends laterally beyond each of the spaced apart panels; a honeycomb core to extend between the two panels and adjacent one side of the intersection panel; a formed core between the two panels and adjacent the opposite side of the intersecting panel with the formed core having a center of honeycomb aligned in a crisscrossing direction, a reinforced resin layer above and below the honeycomb, and a covering of wound resin impregnated reinforcement fibers; a pair of reinforcement members located on opposite sides of the formed core and adjacent the intersecting fabric panel with each reinforcement member having a center of honeycomb, a load bearing resin impregnated reinforced layer above and below the honeycomb and a resin impregnated would fiber reinforcement covering; and the units are all cured into a composite wing spar joint.

4,395,451

SEMICONDUCTOR WAFER AND DIE HANDLING METHOD AND MEANS

Victor E. Althouse, 393 Traverso Ave., Los Altos, Calif. 94022

Filed Jul. 14, 1980, Ser. No. 168,031
Int. Cl.³ B32B *3/26, 25/20*
U.S. Cl. 428—141 **16 Claims**



1. A non-adhesive carrier for handling semiconductor articles having a smooth face, said carrier comprising,

a rigid substrate having a flat upper face,

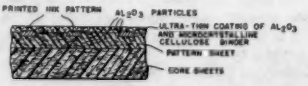
a resilient silicone elastomeric sheet having a Shore A hardness of between 15 and to about 90 member attached to the flat upper face of the substrate, said silicone elastomeric sheet member having a flat lower surface attached to the upper flat face of said substrate and having an upper exposed texturized surface for support of semiconductor articles, the texturized upper surface being effective to substantially reduce interfacial forces between said surface and the smooth surface of a semiconductor article supported thereon so that the semiconductor article can be readily removed from said surface.

4,395,452

ABRASION RESISTANT LAMINATE

Herbert I. Scher, and Israel S. Ungar, both of Randallstown, Md., assignors to Nevamar Corporation, Odenton, Md.

Division of Ser. No. 136,220, Apr. 1, 1980, Pat. No. 4,305,987, which is a division of Ser. No. 879,848, Feb. 22, 1978, Pat. No. 4,255,480, which is a continuation-in-part of Ser. No. 758,265, Jan. 10, 1977, abandoned. This application Sep. 2, 1981, Ser. No. 298,548
Int. Cl.³ B32B *3/00*
U.S. Cl. 428—148 **13 Claims**



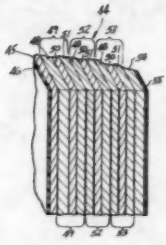
1. A print sheet for use in the preparation of decorative

laminates of high abrasion resistance, comprising: a paper sheet substrate having a print design thereon, and an ultra-thin abrasion resistant porous coating over said print design, said ultra-thin abrasion resistant coating comprising a mixture of (1) an abrasion resistant hard mineral of particle size 20–50 microns in high concentration sufficient to provide an abrasion resistant layer without interfering with visibility and (2) binder material for said mineral compatible with a thermosetting laminating resin selected from the group consisting of melamine-formaldehyde resin and polyester resin, and being impregnable with said laminating resin, said binder material being present in an amount sufficient to bind and stabilize said abrasion resistant mineral to the surface of said paper sheet.

4,395,453
FIRE AND HEAT RESISTANT STRUCTURE

Ellwood L. Lines, Jr., New Haven, and Douglas A. Farmer, Jr., Madison, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Sep. 11, 1981, Ser. No. 301,160
Int. Cl.³ B32B 7/02, 15/08, 9/06, 27/00
U.S. Cl. 428—216 39 Claims



1. In a fire and heat resistant partition having a first side and an opposing second side with a plurality of laminae therebetween to protect an object adjacent the first side from a fire or heat generating source adjacent the second side, the combination comprising:

(a) a first lamina of predetermined thickness defining the first side and formed at least partially of aluminum;

(b) at least one ply bonded to the first lamina, the ply comprising:

i. a second lamina of fibrous material of predetermined thickness and strength adjacent the first lamina;

ii. a third lamina of predetermined thickness formed at least partially of an aluminum and having generally planar opposing sides;

iii. a fourth lamina of fibrous material of predetermined thickness and strength; and

iv. a first bonding agent bonding each lamina of fibrous material to each of the opposing sides of the third lamina; and

(c) a second bonding agent of predetermined thickness bonding the at least one ply to the first lamina.

18. In a fire and heat resistant partition having a first side and an opposing second side with a plurality of laminae therebetween to protect an object adjacent the first side from a fire or heat generating source adjacent the second side, the combination comprising:

(a) a first generally planar lamina of predetermined thickness defining the first side formed at least partially from aluminum;

(b) a plurality of plies adjacent the first lamina including at least an innermost ply and an outermost ply arrayed such that the innermost ply is a shorter distance from the first side than the outermost ply;

i. a second generally planar lamina of fibrous material of predetermined thickness and strength adjacent the first lamina;

ii. a third generally planar lamina of predetermined thickness and strength formed at least partially of aluminum and having generally planar opposing sides with one of the opposing sides being adjacent the second lamina;

iii. a fourth generally planar lamina of fibrous material of predetermined thickness and strength adjacent the other of the opposing sides of the third lamina; and

iv. a first bonding agent bonding each lamina of fibrous material to each of the opposing sides of the third lamina;

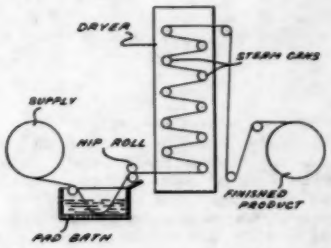
(c) at least one lamina of fibrous material of predetermined thickness and strength bonded to the outermost ply by bonding means; and

(d) a second fire resistant bonding agent of predetermined thickness bonding each ply to each adjacent ply.

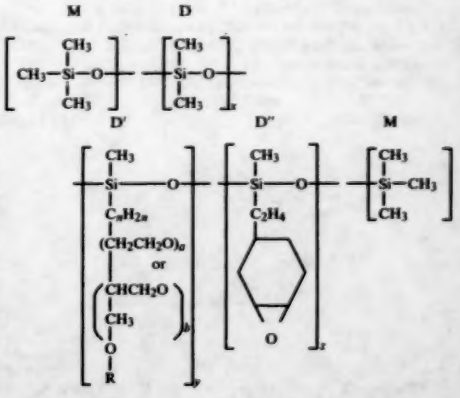
4,395,454
ABSORBENT MICROBIOCIDAL FABRIC AND PRODUCT

A. Frank Baldwin, Greensboro, N.C., assignor to Burlington Industries, Inc., Greensboro, N.C.

Continuation-in-part of Ser. No. 310,416, Oct. 9, 1981, abandoned. This application Jul. 20, 1982, Ser. No. 400,092
Int. Cl.³ B32B 27/00
U.S. Cl. 428—290 3 Claims



1. An absorbent, bioactive, highly wettable non-woven cellulosic medical substrate having incorporated thereon a non-leachable, bioactive amount of 3-(trimethoxysilyl)-propyloctadecyl dimethyl ammonium chloride present in an amount from about 0.15% to about 1.05% on the basis of the weight of the substrate; as a wettable hydrophilic coupling agent, an organosilicone terpolymer of the formula:



present in an amount of from about 0.25% to about 1.25% on

the basis of the weight of the substrate; and a tinctorial amount of a direct dye

wherein the bioactive material and the hydrophilic coupling agent and the dye are substantively attached to the fibers of the cellulosic substrate, such that the bioactive compound, the hydrophilic coupling agent and the dye are substantially non-leachable from the substrate.

4,395,455

POLYESTER FIBERFILL BATTING HAVING IMPROVED THERMAL INSULATING PROPERTIES

Michael S. Frankosky, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 28, 1982, Ser. No. 343,499

Int. Cl.³ B32B *5/24, 15/14, 27/02*

U.S. Cl. 428—299 **2 Claims**

1. An improved insulating material for use in thermally insulated textile articles which material consists essentially of a plurality of substantially parallel layers of high-loft polyester fiberfill consisting essentially of intermingled hollow fibers having a denier per fiber of 4 to 6 and a void content of from 8 to 30 percent with adjacent layers being separated from one another by a thin flexible sheet of metal foil or metalized polymeric film with the layered structure having an average density within the range of from about 0.35 to about 0.6 lb./ft.^{3} and the thickness of each fiberfill layer is within the range of about 0.25 to 0.6 in. so that compared to an all fiber sample of the same weight and density the increase in CLO units due to the separating sheets corresponds to an increase of at least 15 percent.

4,395,456

INORGANIC FOAM

Graham V. Jackson, Vicars Cross; Terence Goulding, Garswood, and John A. A. Bradbury, Runcorn, all of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Jan. 5, 1981, Ser. No. 222,683

Claims priority, application United Kingdom, Jan. 10, 1980, 8000881

Int. Cl.³ B32B *19/02, 19/04;* **C04B** *21/00*

U.S. Cl. 428—304.4 **38 Claims**

1. A rigid inorganic foam product consisting essentially of prills of foam of one or more layer minerals, each prill being of cellular structure.

4,395,457

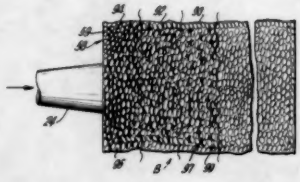
THERMAL INSULATING AND WATERPROOFING OF MASONRY STRUCTURES BY ENTRAPMENT OF MULTILAYERED DEAD AIR SPACES WITH USE OF HIGH SPEED INJECTED LIQUID-AIR STREAM

Jay S. Wyner, Sands Point, N.Y., assignor to Therma-Plex Corporation, Long Island City, N.Y.

Continuation-in-part of Ser. No. 126,194, Mar. 3, 1980, abandoned. This application Jan. 30, 1981, Ser. No. 230,257

Int. Cl.³ B32B *3/26*

U.S. Cl. 428—312.4 **7 Claims**



1. The method of insulating an existing masonry granular structure without substantially altering the outward appearance of the structure, comprising the steps of injecting an insulating liquid within the structure, in situ, to form a first barrier layer at a relatively deep penetration with respect to an exposed accessible surface of the structure, and subsequently injecting an insulating liquid within the structure, in situ, to form a second barrier layer at a relatively shallow penetration with respect to the surface of the structure, the barrier layers being in juxtaposition with one another, thereby entrapping dead air between the granules of the masonry structure, wherein the insulating liquid is injected into the structure by means of a liquid-air stream, wherein the first relatively-deep layer is applied under given parameters of viscosity and temperature of the insulating liquid, velocity of the liquid-air stream, and time of application, and wherein any of said given parameters may be varied to apply the second relatively-shallow layer.

2. A masonry structure made in accordance with the method of claim 1.

4,395,458

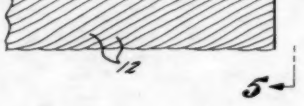
GRAPHITE IMPREGNATED POLYAMIDE TENNIS STRINGS

Ben T. Huang, 16652 Gemini La., Huntington Beach, Calif. 92647

Filed Aug. 17, 1981, Ser. No. 293,529

Int. Cl.³ B32B *9/00;* **D02G** *3/04, 3/36*

U.S. Cl. 428—367 **14 Claims**



1. A filament comprising a polymer having an amount of graphite particles present throughout the entire volume of the filament sufficient to introduce significant polymer cross-linking substantially in the absence of polymer cleavage.

9. A tennis racket string having a cross-sectional diameter of about 0.054 inch, said string comprising about 79 entwined, fused filaments, wherein said filaments consist essentially of substantially linear nylon having 0.9 weight percent graphite particles having a diameter ranging from about 0.1 to about 2.0 microns, said particles being present throughout the entire volume of the filament, and said string has a tensile strength of about 63,900 psi, an elongation of about 17.1% at the tension of the breaking point, modulus of elasticity of about 0.268×10^6 psi and loss coefficients of about 7.5% at 50 lbs., about 9.8% at 60 lbs., about 11% at 70 lbs., and about 11.5% to 80 lbs. applied force.

4,395,459

REINFORCED LAMINATES PRODUCED FROM CROSSLINKABLE THERMOPLASTIC OLEFIN POLYMER MATERIAL

C. George Herschdorfer, 336 Betsy Brown Rd., Port Chester, N.Y. 10573, and Dennis J. Vaughan, Rte. 10 Longview Dr., Anderson, S.C. 29621

Division of Ser. No. 51,837, Jun. 25, 1979, Pat. No. 4,292,106, which is a continuation-in-part of Ser. No. 923,654, Jul. 11, 1978, abandoned. This application Oct. 27, 1980, Ser. No. 200,894

Int. Cl.³ B29D *7/14, 7/16, 9/04, 23/04*

U.S. Cl. 428—391 **37 Claims**

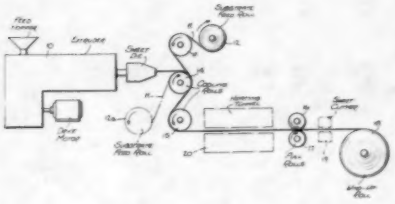
1. Reinforced laminates of crosslinkable thermoplastic olefin polymer material, produced by the process of

(a) heating a normally solid, high molecular weight crosslinkable thermoplastic olefin polymer selected from the group consisting of ethylene homopolymers, copolymers

of ethylene and at least one acyclic mono-1 olefin hydrocarbon having 2 to 8 carbon atoms per molecule, and mixtures thereof, having a melt index of at least about 10, and a density in the range of 0.910 to 0.970 and containing an acetylenic diperoxy catalyst which reacts with and effects crosslinking of said polymer and which has a decomposition temperature between about 310° F. and about 525° F., to a molten state at a melting temperature between about 270° F. and 300° F.,

(b) forming a continuous non-reinforced sheet from said molten polymer at a temperature below said decomposition temperature,

(c) cooling said continuous sheet to a temperature below said melting temperature to a self-supporting, two-dimensional molecular state,



(d) combining said sheet in said self-supporting state with a glass fibrous substrate treated with an unsaturated organosilanol coupling agent which reacts with said polymer and said glass fibrous substrate and effects bonding of said polymer to said substrate to form a laminate,

(e) heating said laminate under pressure to a temperature between about 310° F. and about 525° F. to react said catalyst with said polymer and effect at least 80% crosslinking of said polymer to a three-dimensional molecular state, and

(f) cooling said laminate to a temperature below said melting temperature to a self-supporting state,

(g) said laminate having a dielectric constant in Condition A at 1 MC/Sec. of about 2.40 to about 3.43.

4,395,460

PREPARATION OF POLYSILAZANE POLYMERS AND THE POLYMERS THEREFROM

John H. Gaul, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Sep. 21, 1981, Ser. No. 304,446

Int. Cl.³ B05D *3/02;* **C04B** *35/52;* **B32B** *9/00;* **C09K** *3/00*

U.S. Cl. 428—408 **31 Claims**

1. A process of preparing a polysilazane polymer which consists of contacting and reacting in an inert, essentially anhydrous, atmosphere, at a temperature in the range of 25° C. to 370° C.

(A) ammonia and

(B) chlorine-containing disilanes selected from the group consisting of

(i) a chlorine-containing disilane having the general formula

$$[Cl_aR_bSi]_2$$

and

(ii) a mixture of chlorine-containing disilanes having the general formula

$$[Cl_cR_dSi]_2$$

wherein

a has a value of 1.5–2.0;

b has a value of 1.0–1.5;

the ratio of c to d is in the range of 1:1 to 2:1,

the sum of a+b is equal to three;

the sum of c+d is equal to three; and

R in each case is selected from the group consisting of the vinyl group, alkyl radicals of 1–3 carbon atoms and the phenyl group.

4,395,461

METHOD FOR MAKING SILICON COATED POLYCARBONATES AND ARTICLE OBTAINED THEREFROM

Ta-Yen Ching, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Oct. 23, 1981, Ser. No. 314,165

Int. Cl.³ C08L *83/12;* **C09K** *9/00;* **B32B** *27/36;* **B05D** *3/02*

U.S. Cl. 428—412 **5 Claims**

1. A method for making a composite of a polycarbonate substrate and a silicon hardcoat having improved weatherability which comprises,

(1) treating a polycarbonate substrate with a solution of the hydrolysis product of a silylated organic UV screen which has been allowed to hydrolyze for a period not exceeding about three days and curing the applied hydrolyzate on the treated substrate at a temperature of from 75° C. to 150° C. and

(2) applying onto the treated polycarbonate substrate a silicone hardcoat composition and thereafter heating the resulting composite to a temperature in the range of from 75° C. to 150° C. until the applied hardcoat composition is cured.

5. A polycarbonate silicone hardcoat composite made in accordance with claim 1.

4,395,462

FLUOROELASTOMER COATED SILICONE RUBBER

Keith E. Polmanteer, Weidman, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Sep. 13, 1982, Ser. No. 416,805

Int. Cl.³ B32B *25/20*

U.S. Cl. 428—420 **21 Claims**

1. An article of manufacture comprising a silicone rubber substrate having a cured coating on at least one surface thereof, said coating being cohesively bonded to the substrate and comprising in the uncured state (a) a peroxide-curable fluoroelastomer gum wherein the repeating units are derived from the polymerization of at least one fluorine-containing ethylenically unsaturated organic compound, (b) an amount of an organic peroxide sufficient to achieve curing of said fluoroelastomer gum at a temperature of from 100° to 200° C. and (c) an amount of an epoxide compound sufficient to react with the acidic by-products evolved during curing of said fluoroelastomer gum.

4,395,463

ARTICLE COMPRISING SILICONE RESIN COATED, METHACRYLATE-PRIMED SUBSTRATE

William D. Kray, Burnt Hills, N.Y., assignor to General Electric Company, Waterford, N.Y.

Filed Jun. 3, 1980, Ser. No. 156,268

Int. Cl.³ B32B *27/36, 27/30*

U.S. Cl. 428—447 **22 Claims**

1. An article comprising a solid substrate having at least one surface on which is deposited:

(i) a layer of a primer composition; and,

(ii) a layer of a cured top coat containing a colloidal silica filled thermoset organopolysiloxane, said primer composition comprising

(a) from about 2 to about 10 parts by weight of a high molecular weight thermoplastic methacrylic ester polymer or copolymer selected from

(1) polymers and copolymers comprising C_1–C_6 alkyl methacrylate;

(2) copolymers comprising C_1–C_6 alkyl methacrylates and a reaction product of glycidyl methacrylate and a hydroxybenzophenone ultraviolet light screening agent;

(3) copolymers comprising C_1–C_6 alkyl methacrylates and (A) a reaction product comprising units of methacrylic acid and γ-chloropropyltrimethoxysilane (B) acrylic or methacrylic acid, or (C), a mixture of (A) and (B); or

(4) a mixture of any of the foregoing;

(b) from about 60 to about 90 parts by weight of 2-ethoxyethanol;

(c) from about 10 to about 30 parts by weight of 4-hydroxy-4-methyl-2-pentanone; and

(d) from about 0 to about 20 parts by weight of glacial acetic acid, per 100 parts by weight of (a), (b), (c) and (d) combined.

18. A process for producing a coated article which comprises the steps of:

(i) applying onto at least a surface of a substrate a layer of a primer composition of claim **1**:

(ii) air drying and evaporating the volatile solvents from said primer composition at a temperature of from about 15° to about 30° C.;

(iii) applying into said air dried primer layer a silica filled curable organopolysiloxane top coat solvent-containing composition;

(iv) evaporating the volatile solvents from said top coat composition; and

(v) applying heat to said top coat composition to cure to same.

4,395,464

COPPER BASE ALLOYS MADE USING RAPIDLY SOLIDIFIED POWDERS AND METHOD

Viswanathan Panchanathan, Billerica; Ranjan Ray, Waltham, and Bill C. Giessen, Cambridge, all of Mass., assignors to Marko Materials, Inc., No. Billerica, Mass.

Filed Apr. 1, 1981, Ser. No. 249,926
Int. Cl.³ C22C *9/06*; B22F *7/00, 9/00*
U.S. Cl. 428—546 **5 Claims**

1. Fine grained Copper-Nickel alloys containing borides in bulk form having composition $Cu_aNi_bAl_cCr_dM_eB_f$, wherein Cu, Ni, Al, Cr, and B are copper, nickel, aluminum, chromium and boron respectively, and M represents one or more of iron (Fe), cobalt (Co), vanadium (V), and manganese Mn) and wherein a, b, c, d, e and f represent weight percent of Cu, Ni, Al, Cr, M and B respectively and having the following values: a=40–87, b=10.5–44, c=0–10, d=0–18, e=0–8, f=1.5–4 wherein the maximum value of b+c+d+e may not exceed 56, the maximum value of c+d may not exceed 22.5 and the sum of a+b+c+d+e+f=100, made by subjecting the powders of the said alloy by application of pressure and heat, said powders being made by the method comprising the following steps:

(a) forming a melt of said alloy

(b) depositing said melt against a rapidly moving quench surface adapted to quench said melt at a rate in the range of approximately 10^5 to 10^{7}° C./second and form thereby a rapidly solidified brittle strip of said alloys characterized by predominantly a single solid solution structure,

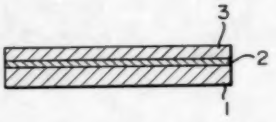
(c) comminuting said strip into powders.

4,395,465

MAGNETIC RECORDING MEDIUM AND PROCESS FOR PRODUCTION THEREOF

Toshinori Takagi, Nagaokakyo; Shinsaku Nakata, Toyonaka; Yoichi Mikami, Kyoto; Masahiro Hotta, and Yoshiyuki Fukumoto, both of Osaka, all of Japan, assignors to Sekisui Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Aug. 7, 1981, Ser. No. 290,966
Claims priority, application Japan, Aug. 13, 1980, 55/112121
Int. Cl.³ C23C *15/00*
U.S. Cl. 428—626 **4 Claims**



1. A process for producing a magnetic recording medium, which comprises

imparting a kinetic energy in a range of 100 eV to 10 KeV to an ionized cluster composed of ferromagnetic metal atoms in a high vacuum corresponding to a pressure of 8×10^{-4} to 1×10^{-10} torr and impinging the resulting ionized cluster beam against a flexible substrate of polymeric material to deposit a first magnetic layer of the ferromagnetic metal on said substrate, and then,

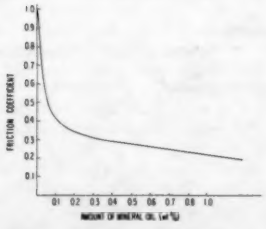
imparting a kinetic energy in a range of 1 eV to 10 KeV to atom ions of a ferromagnetic metal by an ion plating method in a high vacuum corresponding to a pressure of 8×10^{-4} to 1×10^{-10} torr and impinging the resulting atom ion beam against said first magnetic layer to deposit a second magnetic layer of the ferromagnetic metal on said first magnetic layer, wherein in forming the above first magnetic layer, a plate-like accelerating electrode is disposed on the side of the flexible substrate opposite its surface facing the ionized cluster source to field-accelerate the ionized cluster, and, in forming the said second magnetic layer, a plate-like accelerating electrode is disposed on the side of the substrate opposite its surface facing the atom ion source to field-accelerate the atom ions.

4,395,466

MAGNETIC RECORDING MEDIUM

Hiroshi Ogawa, and Yasuo Tamai, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Odawara, Japan

Filed May 20, 1981, Ser. No. 265,492
Claims priority, application Japan, May 21, 1980, 55-67558
Int. Cl.³ G11B *5/70*
U.S. Cl. 428—695 **3 Claims**



1. A magnetic recording medium, comprising:

a non-magnetic base;

a magnetic layer formed on said base; said magnetic layer consisting essentially of a binder and fine ferromagnetic particles dispersed within said binder, a mineral oil having

a viscosity of 300 cs or less at 37.8° C. contained in said magnetic layer an an amount of 0.05 weight percent to 1 weight percent, and an aliphatic acid having 12 to 22 carbon atoms contained in said magnetic layer in an amount of about 0.2 weight percent to 5.0 weight percent, based on the weight of the fine ferromagnetic powder.

4,395,467

TRANSPARENT CONDUCTIVE FILM HAVING AREAS OF HIGH AND LOW RESISTIVITY

John L. Vossen, Jr., Bridgewater, N.J., and Joseph Zelez, Tannersville, Pa., assignors to RCA Corporation, New York, N.Y.

Filed Dec. 30, 1981, Ser. No. 335,707
Int. Cl.³ C23C 15/00; B05D 3/06
U.S. Cl. 428—697 8 Claims

7. A method of forming a transparent conductive layer having areas of high and low resistivity on a substrate comprising depositing a film of indium oxide and zirconium oxide on said substrate, ion implanting protons into a portion of said film and annealing the film in reducing gas at a temperature above about 700° C. thereby substantially lowering the resistivity of that portion of the film not ion implanted.

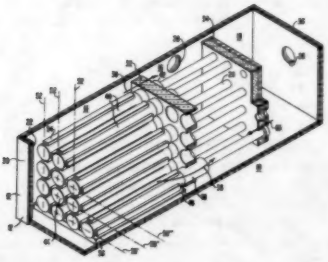
8. A structure produced in accordance with the method of claim 7.

4,395,468

FUEL CELL GENERATOR

Arnold O. Isenberg, Forest Hills, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 219,185, Dec. 22, 1980, abandoned.
This application Nov. 13, 1981, Ser. No. 321,137
Int. Cl.³ H01M 8/12
U.S. Cl. 429—31 18 Claims



1. A high temperature solid electrolyte fuel cell generator, comprising:

a housing means defining a plurality of chambers including a generator chamber and a combustion product chamber;

a porous barrier separating said generator and combustion product chambers;

a plurality of elongated annular fuel cells, each having an electrochemically active length disposed within said generator chamber;

means for flowing a first gaseous reactant through said annular fuel cells and through said porous barrier into said combustion product chamber;

means for flowing a second gaseous reactant into said generator chamber, about said fuel cells, and through said porous barrier into said combustion product chamber; and

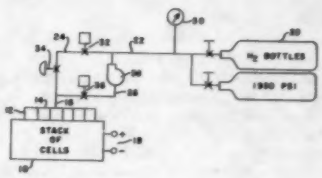
means for segregating said first and second gaseous reactants from direct contact with one another prior to entry of each into said combustion product chamber.

4,395,469

LOW PRESSURE NICKEL HYDROGEN BATTERY

David H. Fritts, Dayton, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jul. 14, 1981, Ser. No. 283,245
Int. Cl.³ H01M 2/00, 2/04, 4/36, 8/18
U.S. Cl. 429—34 3 Claims



1. A nickel-hydrogen battery system comprising:

at least one nickel-hydrogen cell which includes a plurality of positive and negative electrodes with separators in a starved electrolyte condition enclosed in a low pressure casing, with positive and negative terminals and a cell gas line sealed into said casing;

storage means for storing only hydrogen outside of said cell;

gas lines comprising parallel discharge and charge paths between said cell gas line and said storage means, with the discharge path comprising a first valve means with a pressure regulator, and the charge path comprising a second valve means in series with a pump;

the first valve means being open and the second valve means being closed during discharge, so that hydrogen is supplied via the regulator at a controlled low pressure to said cell;

the first valve means being closed and the second valve means being open during charge, and power being applied to the pump, so that hydrogen evolved by said cell is supplied to the storage means;

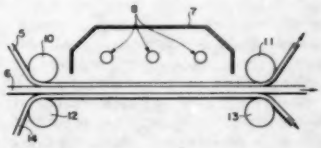
so that said cell is at a relatively low pressure at all times during discharge, charge, and standby.

4,395,470

PROCESS OF FORMING MAGNETIC LATENT IMAGES

Koichi Saitoh, Ebina, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Jul. 31, 1981, Ser. No. 288,876
Claims priority, application Japan, Aug. 1, 1980, 55/106192
Int. Cl.³ G03C 19/00
U.S. Cl. 430—39 10 Claims



1. A process of forming magnetic latent images using a magnetizable magnetic recording body, thermal pattern input means for heating the magnetic recording body in accordance with a picture image to be recorded, and a master magnetic body uniformly magnetized in advance, said process comprising the steps of:

(a) heating said magnetic recording body to a temperature at least equal to its Curie point in a pattern of a picture image to be recorded with said thermal pattern input means; and

(b) bringing the heated magnetic recording body and said master magnetic body into contact with each other wherein said uniformly magnetized master magnetic body causes a thermomagnetic transfer onto said magnetic recording body to form a magnetic latent image on said magnetic recording body corresponding to said pattern of said picture image by thermal residual magnetization.

4,395,471

BLENDED TONERS OF FUNCTIONAL COLOR

Oscar G. Hauser, Rochester, and Frederick R. Ruckdeschel, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 212,789, Dec. 4, 1980, abandoned, which is a continuation of Ser. No. 80,625, Oct. 1, 1979, abandoned. This application Apr. 9, 1982, Ser. No. 366,946

Int. Cl.³ G03G *9/10, 13/08*

U.S. Cl. 430—45 **11 Claims**

1. A developer composition comprised of a blend of toner particles containing a styrene/n-butyl methacrylate copolymer rsin, and the cyan colorant copper tetra-4-(octadecylsulfonomido)phthalocyanine, a styrene/n-butyl methacrylate copolymer resin and the magenta colorant 2,9-dimethyl substituted quinacridone, a styrene/n-butyl methacrylate copolymer resin and the yellow colorant diaryldide 3,3-dichlorobenzidene aceto acetanilide, and an uncoated single steel carrier material.

4,395,472

PLAIN PAPER REPRODUCTION PROCESS

Jean J. Robillard, 46 Arnold Rd., Pelham, Mass. 01002

Filed Jun. 19, 1981, Ser. No. 275,207

Int. Cl.³ G03G *9/14, 9/08*

U.S. Cl. 430—47 **10 Claims**

1. A light sensitive photographic process for producing a permanent record on plain paper of a light image which comprises: (a) exposing to said image the surface of a photodielectric recording medium supported on a plastic belt, said photodielectric medium comprising a layer of a homogeneous intimate mixture of photodielectric pigments dispersed in a binder which exhibits a change of dielectric constant and dielectric loss factor in those areas of said photodielectric recording medium exposed to said light image and forming as a result of exposure to said image a latent image in terms of local variations of dielectric constant and dielectric loss factor in said photodielectric recording medium; (b) contacting the surface of said exposed photodielectric recording medium with the surface of a plain paper image receiving sheet backed with a plastic substrate coated with an image forming medium comprising a dispersion of sublimable dyes in a binder, the surface of said image forming medium being in contact with said plain paper image receiving sheet; (c) impressing a high frequency electric field through said photodielectric recording medium, plain paper image receiving sheet and image forming medium to provide the sublimation of the sublimable dyes of said image forming medium in selected areas corresponding to said light image onto said plain paper receiving sheet by selective generation of heat due to dielectric losses in said photodielectric recording medium, said heat generation in said photodielectric recording medium being substantially proportional to the change in dielectric constant and dielectric loss factor in said photodielectric recording medium according to the previous exposure of said medium to said radiation image, thereby producing a photographic record of the image made of sublimed dyes from said image forming medium onto said plain paper image receiving sheet.

4,395,473

ELECTROPHOTOGRAPHIC SENSITIVE MATERIALS CONTAINING BARBITURIC ACID OR THIOBARBITURIC ACID DERIVATIES

Seiji Horie; Masayoshi Nagata; Junji Nakano, and Hideo Sato, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

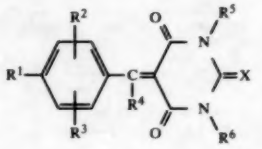
Filed Dec. 17, 1981, Ser. No. 331,745

Claims priority, application Japan, Jan. 16, 1981, 56-4734

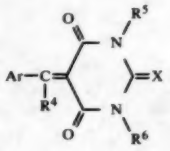
Int. Cl.³ G03G *5/00*

U.S. Cl. 430—58 **11 Claims**

1. An electrophotographic sensitive material having an electrophotographic sensitive layer containing a charge generating material and a charge transfer material, wherein said charge generating material comprises a barbituric acid derivative or thiobarbituric acid derivative represented by formula (I) or (II)



(I)



(II)

wherein

(i) X represents an oxygen atom or a sulfur atom,

(ii) R^1 represents an alkoxy group, an aralkyl group or a substituted amino group represented by

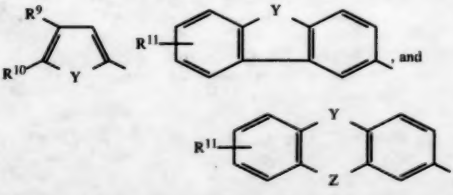
wherein R^7 and R^8 each represents an unsubstituted or substituted alkyl group or phenyl group, or R^7 and R^8 together represents a group forming a nitrogen atom-containing heterocyclic ring,

(iii) R^2 and R^3 each represents a hydrogen atom, a halogen atom, an alkyl group, or a lower alkoxy group,

(iv) R^4 represents a hydrogen atom, an alkyl group, or an unsubstituted or substituted phenyl group,

(v) R^5 and R^6 each represents an alkyl group, an aralkyl group, or an unsubstituted or substituted phenyl group, and

(vi) Ar represents a group selected from those represented by the formulas



wherein Y and Z each represents S, O, or N-R^{12}, wherein R^{12}

represents an alkyl group having from 1 to 4 carbon atoms, R^9 and R^{10} each represents a hydrogen atom, an alkyl group or an alkoxy group, or R^9 and R^{10} together represent a group forming a benzene ring or a naphthalene ring, and R^{11} represents a hydrogen atom, an alkyl group, an aralkyl group, an alkoxy group, an aryloxy group, an acyl group, an alkoxycarbonyl group, an aryloxycarbonyl group, a halogen atom, a monoalkylamino group, a dialkylamino group, an amido group, or a nitro group.

4,395,474

ELECTROPHOTOGRAPHIC PHOTOSENSITIVE MEMBER WITH CURED CYCLIZED RUBBER BINDER

Hideyo Kondo, Toride, and Naoto Fujimura, Abiko, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 950,728, Oct. 12, 1978, abandoned. This application Oct. 22, 1980, Ser. No. 199,531

Claims priority, application Japan, Oct. 15, 1977, 52-123683

Int. Cl.³ G03G *5/087*

U.S. Cl. 430—67 **2 Claims**

1. In an electrophotographic photosensitive member having a coated photoconductive layer comprising a photoconductive material dispersed in a binder, the improvement which comprises a curable cyclized rubber selected from the group consisting of cyclized butadiene rubber and cyclized isoprene rubber as said binder and said curable cyclized rubber is cured after coating to form said photoconductive layer.

2. The electrophotographic photoconductive member according to claim 1 further including an insulating layer on said photoconductive layer.

4,395,475

CONDENSATION POLYMERIC PHOTOCONDUCTORS CONTAINING PENDANT ARYLAMINES

John M. Noonan, and Jerome H. Perlstein, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 20, 1981, Ser. No. 285,235

Int. Cl.³ G03G *5/07*

U.S. Cl. 430—69 **13 Claims**

1. An electrophotographic element comprising an electrically conducting support and a photoconductive layer in electrical contact with said support, said photoconductive layer comprising a condensation polymer containing, as repeating units, the condensation residues of:

(a) a diacid, and

(b) an organic difunctional compound capable of undergoing condensation polymerization with said diacid,

wherein at least one of said residues contains an appended arylamine photoconductor group.

4,395,476

DEVELOPING METHOD FOR DEVELOPER TRANSFER UNDER A.C. ELECTRICAL BIAS AND APPARATUS THEREFOR

Junichiro Kanbe; Tsutomu Toyono, both of Tokyo; Nagao Hosono, Chofu, and Tohru Takahashi, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 58,434, Jul. 18, 1979, abandoned. This application May 18, 1981, Ser. No. 264,516

Claims priority, application Japan, Jul. 28, 1978, 53-92105; Jul. 28, 1978, 53-92106; Jul. 28, 1978, 53-92107; Apr. 28, 1979, 54-52641; Jun. 1, 1979, 54-68562

Int. Cl.³ G03G *13/09, 15/09*

U.S. Cl. 430—102 **32 Claims**

1. A method of developing an electrostatic latent image on an image bearing member comprising bringing a layer of one-component dry developer on a carrier to a developing zone in which the gap between the image bearing member and the carrier is greater than the thickness of the layer and creating in the gap an alternating electric field which, in a first stage, causes transition of developer from the carrier to the image bearing member and back transition of developer from the member to the carrier and which, in a second stage, is of lower intensity than in the first stage, to leave a developed image on said image bearing member.

4,395,477

NEUTRALIZING-TIMING LAYER FOR COLOR TRANSFER ASSEMBLAGES CONTAINING LACTONE POLYMER

Edward P. Abel, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 21, 1982, Ser. No. 341,412

Int. Cl.³ G03C *1/40, 1/10*

U.S. Cl. 430—216 **29 Claims**

1. In a photographic assemblage comprising:

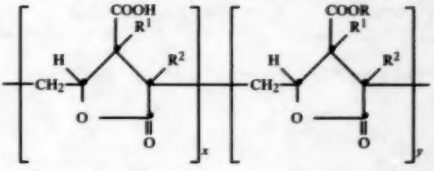
(a) a photographic element comprising a support having thereon at least one photosensitive silver halide emulsion layer having associated therewith a dye image-providing material;

(b) a dye image-receiving layer;

(c) neutralizing means for neutralizing an alkaline processing composition; and

(d) timing means located between said neutralizing means and said dye image-receiving layer;

the improvement wherein said neutralizing means and said timing means are provided by a single layer which functions as a combined neutralizing-timing layer and consists essentially of a carboxy-ester-lactone polymer having recurring units of the formula



wherein

R is alkyl having from 1 to about 12 carbon atoms or aralkyl having from 7 to about 12 carbon atoms;

R^1 and R^2 are each independently hydrogen or methyl;

x is about 1 to about 15 mole %; and

y is about 85 to about 99 mole %.

4,395,478

DIRECT-POSITIVE CORE-SHELL EMULSIONS AND PHOTOGRAPHIC ELEMENTS AND PROCESSES FOR THEIR USE

Harry A. Hoyen, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 12, 1981, Ser. No. 320,902

Int. Cl.³ G03C *1/34*

U.S. Cl. 430—217 **24 Claims**

1. A radiation-sensitive emulsion particularly adapted to forming a direct-positive image comprised of

a dispersing medium and

silver halide grains capable of forming an internal latent image,

said silver halide grains being comprised of a sensitized core and a shell, and

said shell incorporating in an amount sufficient to reduce rereversal one or more polyvalent metal ions chosen from the group consisting of manganese, copper, zinc, cadmium, lead, bismuth, and lanthanides, said emulsion when coated on a transparent film support at a silver coverage of 4 grams per square meter, exposed to a 500 watt tungsten lamp for times ranging from 0.01 to 1 second at a distance of 0.6 meter, developed for 5 minutes at 20° C. in Developer Y below, fixed, washed, and dried, having a maximum density at least five times the maximum density

of an identical test portion which has been exposed in the same way and developed for 6 minutes at 20° C. in Developer X below, fixed, washed, and dried:

	Grams
Developer X	
N—methyl-p-aminophenol sulfate	2.5
Ascorbic acid	10.0
Potassium metaborate	35.0
Potassium bromide	1.0
Water to 1 liter	
Developer Y	
N—methyl-p-aminophenol sulfate	2.0
Sodium sulfite, desiccated	90.0
Hydroquinone	8.0
Sodium carbonate, monohydrate	52.5
Potassium bromide	5.0
Potassium iodide	0.5
Water to 1 liter.	

4,395,479

STRIPPING COMPOSITIONS AND METHODS OF STRIPPING RESISTS

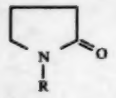
Irl E. Ward; Lisa G. Hallquist, and Thomas J. Hurley, all of Easton, Pa., assignors to J. T. Baker Chemical Company, Phillipsburg, N.J.

Continuation-in-part of Ser. No. 304,787, Sep. 23, 1981, abandoned. This application Aug. 17, 1982, Ser. No. 408,051

Int. Cl.³ B01F *1/00*; B08B *7/00*; G03C *5/00*

U.S. Cl. 430—258 **32 Claims**

1. A stripping composition comprising from about 30 to about 90 weight percent of a 2-pyrrolidinone compound of the formula



wherein R is selected from the group consisting of hydrogen, alkyl of 1 to 3 carbon atoms and hydroxyalkyl of 1 to 3 carbon atoms, and from about 10 to about 70 weight percent of a tetrahydrothiophene-1,1-dioxide compound of the formula

wherein R^1 is selected from the group consisting of hydrogen, methyl or ethyl.

4,395,480

DEVELOPER MIXTURE AND PROCESS FOR DEVELOPING EXPOSED NEGATIVE-WORKING DIAZONIUM SALT LAYERS

Gerhard Sprintschnik, Hofheim, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Jan. 6, 1982, Ser. No. 337,396

Claims priority, application Fed. Rep. of Germany, Jan. 8, 1981, 3100259

Int. Cl.³ G03C *1/58, 5/30*

U.S. Cl. 430—309 **4 Claims**

1. A process for developing negative-working reproduction layers containing a diazonium salt polycondensation product, which comprises treating an exposed reproduction layer and dissolving away the unexposed areas of the layer with an aqueous developer mixture containing about 0.5 to 15 percent by weight of at least one salt of an alkanoic acid having 8 to 13 carbon atoms and having an Na^+, NH_4^+ or K^+ ion as the cation, and about 0.5 to 20 percent by weight of at least one low-foaming, nonionic surfactant.

4,395,481

METHOD FOR THE MANUFACTURE OF RESIST STRUCTURES

Siegfried Birkle, Höchstadt; Roland Rubner, Röttenbach; Hans Hauschildt, Erlangen, and Eva-Maria Rissel, Forchheim, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Sep. 25, 1981, Ser. No. 305,798

Claims priority, application Fed. Rep. of Germany, Sep. 29, 1980, 3036615

Int. Cl.³ G03C *5/00*

U.S. Cl. 430—326 **3 Claims**

1. In a method for the manufacture of resist structures on the basis of positive resists wherein a polymer material in the form of a layer or film is exposed with a predetermined pattern to short-wave UV rays and the exposed portions of the layer or film thereafter removed, the improvement wherein the polymer material comprises a copolymer of:

(a) 1 to 70 mol percent alkylmethacrylate with an alkyl radical having 1 to 4 C atoms; and

(b) 30 to 99 mol percent of an ethylenically unsaturated monomer having chlorine and/or cyan substituents.

4,395,482

METHOD FOR THE PREPARATION OF HEAT-RESISTANT RELIEF STRUCTURES USING POSITIVE RESISTS

Hellmut Ahne, Röttenbach; Eberhard Kühn, Hemhofen, and Roland Rubner, Röttenbach, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Division of Ser. No. 170,935, Jul. 18, 1980, Pat. No. 4,339,521. This application Apr. 28, 1982, Ser. No. 372,540

Claims priority, application Fed. Rep. of Germany, Aug. 1, 1979, 2931297

Int. Cl.³ G03C *5/00*

U.S. Cl. 430—326 **7 Claims**

1. A method for the preparation of heat-resistant relief structures, comprising:

(a) applying to a substrate, in the form of a layer or foil, a heat-resistant positive resist comprised of (1) a precursor of a highly heat-resistant polymer and (2) a light-sensitive diazoquinone, said precursor comprising an oligomeric and/or polymeric precursor of a polyoxazole in the form of a polycondensation product of an aromatic and/or heterocyclic dihydroxydiamino compound and a dicarboxylic acid chloride or a dicarboxylic acid ester;

(b) generating exposed or irradiated portions on said resist by treating said resist by a method selected from the group consisting of (1) exposing said resist through a mask with actinic light and (2) irradiating said resist by deflection of a light, electron or ion beam;

(c) removing the exposed or irradiated portions from said layer or foil; and

(d) annealing the relief structure so obtained.

4,395,483

DIRECT POSITIVE TYPE SILVER HALIDE PHOTOSENSITIVE MATERIAL

Terumi Matsuda; Shoji Ishiguro; Shigenori Moriuchi, and Yoshiaki Suzaki, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 142,954, Apr. 23, 1980, abandoned. This application Feb. 26, 1982, Ser. No. 352,928

Claims priority, application Japan, Apr. 27, 1979, 54-52115

Int. Cl.³ G03C 5/24, 1/36

U.S. Cl. 430—411 17 Claims

1. A direct positive type silver halide photosensitive material for obtaining a high contrast image in the highlight portions thereof, said image comprised substantially of only silver prepared by:

(a) chemically fogging silver halide grains, and

(b) subsequent to said fogging, adding at least one metal ammine complex salt in an amount of 10^{-5} to 10^{-2} mol per mol of silver wherein the metal component is selected from the group consisting of cobalt, nickel, ruthenium and chromium.

4,395,484

ROOMLIGHT-STABLE ULTRAVIOLET-RESPONSE PHOTOTHERMOGRAPHIC IMAGING MATERIAL

Greg J. McCarney, Hudson, Wis., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jun. 25, 1982, Ser. No. 392,324

Int. Cl.³ G03C 1/02, 1/84

U.S. Cl. 430—620 8 Claims

1. A thermophotographic layered construction comprising:

a. a transparent or opaque substrate

b. coated upon one surface of said substrate, a continuous layer of a dry silver dispersion coating, said coating comprisng:

(1) a blend of organic silver full soap and half soap to provide in said layer a weight ratio of total silver in the coating to silver soap in the range of 1:7 to 1:4.2,

(2) a polyvinyl acetal resin, said resin to silver soap weight ratio being in the range of 0.6:1 to 2:1, and

c. a protective/reaction topcoat layer comprising a cellulose acetate resin admixed with an effective amount of a development accelerator,

and construction further comprising

d. 0.5 to 20 mole percent of halide ion compared to silver in said silver coating layer or said topcoat layer, at least 96 mole percent of said halide ion being chloride ion, and

e. an effective amount of at least one antihalation agent incorporated in any of layers, a., b., c., or d., or in a separate layer between said substrate and said silver coating layer,

said construction being intrinsically ultraviolet light-responsive and roomlight stable for at least one minute, and capable of forming graphic arts images having a contrast of at least 2.5.

4,395,485

DRY ELECTROPHOTOGRAPHIC TONER COMPRISING SMALL, POLYMER COATED PARTICLES AS FLOW AGENT

Michio Kashiwagi, and Kiichi Nakajima, both of Otsu, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

PCT No. PCT/JP81/00073, § 371 Date Nov. 9, 1981, § 102(e) Date Nov. 9, 1981, PCT Pub. No. WO81/02935, PCT Pub. Date Oct. 15, 1981

PCT Filed Apr. 2, 1981, Ser. No. 321,178

Claims priority, application Japan, Apr. 3, 1980, 55-43860

Int. Cl.³ G03G 9/08, 13/09

U.S. Cl. 430—903 18 Claims

1. A one-component type dry toner, comprising

a resin powder having a particle size of between 5 and 50 microns, and

from 0.01 weight % to 20 weight % of a flow agent powder having a particle size of no greater than one micron and comprising a core covered with a film no greater than 1,000 anstroms thick of a non-hydrophilic synthetic resin selected from the group consisting of epoxy resin, polyester resin, polystyrene resin, polyvinyl chloride resin, polyethylene resin, polypropylene resin, acrylic resin, xylene resin and silicone resin, the core being consisted of one member selected from the group consisting of carbon black, silica, alumina, magnesia, titania, calcia, zirconia, molybdenum disulfide, tungsten disulfide, boron nitride, silicon nitride, aluminum nitride, metallic soap, higher fatty acid, fatty acid amide, higher alcohol, higher alcohol ester, iron, copper, tin, nickel, cobalt, zinc, silver, iron alloy, copper alloy, tin alloy, nickel alloy, cobalt alloy, zinc alloy, and silver alloy.

4,395,486

METHOD FOR THE DIRECT ANALYSIS OF SICKLE CELL ANEMIA

Lois B. Wilson; John T. Wilson, both of Richmond County, Ga., and Robert F. Geever, Aiken County, S.C., assignors to Medical College of Ga. Research Inst., Inc., Augusta, Ga.

Filed Aug. 19, 1981, Ser. No. 294,227

Int. Cl.³ C12Q 1/68; G01N 33/50; C12P 19/34; C12N 15/00

U.S. Cl. 435—6 27 Claims

1. A method for the direct analysis of sickle cell anemia in the human β gene, comprising the steps of:

(a) obtaining an effective amount of amniotic fluid cells from a human;

(b) isolating DNA from said cells;

(c) digesting said DNA with restriction enzyme Dde I to form DNA fragments;

(d) separating said DNA fragments according to their respective molecular weights to form a pattern for said fragments on filter paper; and

(e) detecting the absence of an approximate 175 base pair fragment and the presence of an approximate 376 base pair fragment on said pattern, thereby indicating the sickle cell genotype.

4,395,487

METHOD FOR ASSAY OF α-AMYLASE ACTIVITY

Narimasa Saito, and Tatsuo Horiuchi, both of Noda, Japan, assignors to Noda Institute for Scientific Research, Noda, Japan

Filed Apr. 21, 1981, Ser. No. 256,194

Claims priority, application Japan, May 8, 1980, 55-59980

Int. Cl.³ C12Q 1/40

U.S. Cl. 435—22 6 Claims

1. A method for the assay of α-amylase activity, which comprises adding an α-amylase-containing sample to maltohexaitol or maltohexaonic acid used as substrate, reacting, at the same time or subsequent to the addition, α-glucosidase with the resulting mixture, and determining the reaction product to assay the α-amylase activity.

4,395,488

DRIVE-THROUGH PIT PRODUCTION OF ETHANOL

Delton J. Rowe, 1740 Speyer La., Redondo Beach, Calif. 90278

Filed Sep. 14, 1981, Ser. No. 301,718

Int. Cl.³ C12P 7/06

U.S. Cl. 435—161 8 Claims

1. A method for producing ethanol, comprising the steps of:

depositing carbohydrate-containing material into a pit having a bottom with one end lower than the other and heating pipes within grooves in the bottom below the surface of the bottom;

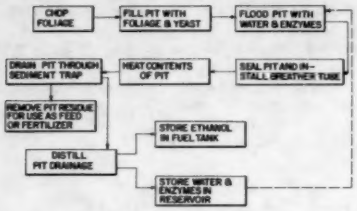
driving a vehicle into the pit and using it to spread said carbohydrate-containing material;

flooding the pit with a mixture of water and hydrolyzing agents until the material is covered with at least six inches of liquid;

fermenting the contents of the pit;

draining the liquid contents of the pit from the lower end of the pit;

separating the drained liquid into concentrated ethanol and a mixture of water and hydrolyzing agents;


CHOP FOLIAGE
FILL PIT WITH FOLIAGE & YEAST
FLOOD PIT WITH WATER & ENZYMES
DRAIN PIT THROUGH SEDIMENT TRAP
HEAT CONTENTS OF PIT
SEAL PIT AND IN-STALL BREATHER TUBE
REMOVE PIT RESIDUE FOR USE AS FEED OR FERTILIZER
STORE ETHANOL IN FUEL TANK
DISTILL PIT DRAINAGE
STORE WATER & ENZYMES IN RESERVOIR

removing the mixture of water and hydrolyzing agents for later use in flooding the pit; and

driving a vehicle into the pit and removing the solid residue from the pit with the vehicle.

4,395,489

PROCESS FOR THE RECOVERY OF GLYCEROL DEHYDROGENASE

Peter Stahl, Bernried; Hans Seidel, Tutzing, and Herwig Brunner, Weilheim, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim-Waldhof, Fed. Rep. of Germany

Filed Dec. 19, 1980, Ser. No. 218,138

Claims priority, application Fed. Rep. of Germany, Dec. 27, 1979, 2952410

Int. Cl.³ C12N *9/04*; C12R *1/01*

U.S. Cl. 435—190 **14 Claims**

1. Process for obtaining glycerol dehydrogenase from micro-organisms, which process comprises culturing a glycerol dehydrogenase-forming *Aerobacter aerogenes* micro-organism in a glycerol-containing nutrient medium, culturing the micro-organism first under aerobic conditions, up to the end of the log phase, thereafter under anaerobic conditions, during which more glycerol is added to the nutrient medium than is used up by the micro-organism, and then isolating the glycerol dehydrogenase formed from the biomass or from the nutrient medium.

4,395,490

PROCESS FOR PRODUCTION OF IMPROVED MALTASE

Charles L. Cooney, Brookline, and Eugene J. Schaefer, Somerville, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation-in-part of Ser. No. 177,709, Aug. 13, 1980, Pat. No. 4,332,899. This application Dec. 10, 1981, Ser. No. 329,449

Int. Cl.³ C12N *9/26, 1/16*

U.S. Cl. 435—201 **8 Claims**

1. In a process for forming maltase utilizing Saccharomyces italicus in a growth medium, said Saccharomyces italicus being obtained by mutation of Saccharomyces italicus and having the property of producing maltase while grown on a carbon source selected from the group consisting of maltose, glycerol, acetate, fructose, glucose and sucrose, the improvement which comprises utilizing in the growth medium yeast extract at a concentration of between about 1 and 15 g/L.

4,395,491

METHOD FOR ISOLATING SOLID MATTER FROM A SALINOMYCIN CULTURE BROTH

Rolf Hübl, Hofheim, and Helmut Heine, Kronberg, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Feb. 13, 1981, Ser. No. 234,318

Claims priority, application Fed. Rep. of Germany, Feb. 15, 1980, 3005642

Int. Cl.³ C07G *17/00*

U.S. Cl. 435—262 **4 Claims**

1. A method for isolating the solid matter from a broth in which salinomycin has been produced by fermentation, which method consisting essentially of fermenting said broth to reduce its content of fats and fat-like substances to a value of less than 2 percent, which fats and fat-like substances are present in said broth as a carbon source and defoaming agent, and spray drying said broth while adding thereto a physiologically acceptable finely powdered material as an anti-agglomeration agent in a manner so that the particles of said anti-agglomeration agent strike those portions of the culture broth solids which have already been largely dried, said anti-agglomeration agent being present in an amount sufficient to suppress agglomeration of said solid matter.

4,395,492

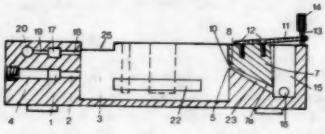
PERFUSION CHAMBER

Douglas Rees, Wellington, New Zealand, assignor to Res-Del Group Ltd., Wellington, New Zealand

Filed Jun. 3, 1981, Ser. No. 270,139

Int. Cl.³ A01N *1/02*; E03C *1/24*

U.S. Cl. 435—283 **10 Claims**



1. A bath for use in the study of in vitro maintained human or animal tissue, comprising a body having a bath cavity, means to allow fluid entry into said bath cavity, and means to allow fluid exit from said bath cavity, wherein the means to allow fluid exit from said bath cavity comprises a spillway formed into a wall of the bath, said spillway having an upper horizontal edge defining the maximum level for fluid in said bath cavity and having a spillway surface sloping downwardly from said edge, said spillway being provided with means to regulate the fluid flow from the bath cavity, said means to regulate comprising a choke having a surface cooperating with said spillway surface and adjustably separated therefrom to be maintained in a predetermined contiguous relationship with said spillway.

4,395,493

MONOLAYER DEVICE USING FILTER TECHNIQUES

David J. Zahniser, Wellesley, and Gerardo L. Garcia, Harvard, both of Mass., assignors to Coulter Electronics, Inc., Hialeah, Fla.

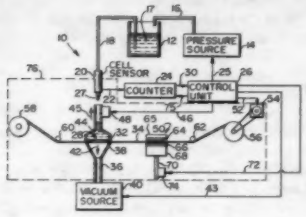
Filed May 14, 1981, Ser. No. 263,712

Int. Cl.³ C12M *1/36, 1/00, 1/34*; G01N *1/00*

U.S. Cl. 435—289 **9 Claims**

1. A monolayering device for applying cells from a liquid suspension to a slide to be examined, comprising: measuring means for obtaining a quantity of the liquid suspension having therein a desired number of said cells; application vessel means located at a first station for receiving said quantity of liquid; a filter tape for receiving at said first station the liquid suspension from said application vessel means, said filter tape being capa-

ble of passing the liquid of the liquid suspension, while retaining said cells; vacuum means coupled to said application vessel means for sucking the liquid of the liquid suspension through said tape, thereby to deposit the cells on a tape portion of said



filter tape; moving means for moving said tape portion having said cells from said first station to a second station; and biasing means for biasing said tape portion having the cells against the slide at said second station and thereby causing the cells to adhere to the slide.

4,395,494

REAGENT AND METHOD FOR THE DETERMINATION OF HYDRAZINE

Detlef Bodart, Darmstadt, and Roland Bitsch, Pfungstadt, both of Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit Beschränkter Haftung, Darmstadt, Fed. Rep. of Germany

Filed Oct. 24, 1980, Ser. No. 200,249

Claims priority, application Fed. Rep. of Germany, Oct. 24, 1979, 2942960

Int. Cl.³ G01N *33/00*

U.S. Cl. 436—111 **9 Claims**

1. A reagent for use in the colorimetric determination of hydrazine in an aqueous solution comprising 4-dimethylaminocinnamaldehyde and an ethylene glycol mono-C_{1-4}-alkylether.

4,395,495

PRODUCTION OF METHANOL

Donald R. Cummings, Cheltenham, England, assignor to D.U.T. Pty Ltd., Sydney, Australia

Filed Jul. 24, 1980, Ser. No. 171,962

Claims priority, application United Kingdom, Aug. 2, 1979, 7926932

Int. Cl.³ C07C *29/15*

U.S. Cl. 518—704 **12 Claims**

1. In a method of producing methanol from a methane-containing gas by (a) steam reforming said gas at elevated temperature and superatmospheric pressure in a reaction vessel and in the presence of a catalyst to form a reformate containing hydrogen, oxides of carbon and unreacted methane and (b) subjecting a reaction stream comprising said reformate to conditions of elevated temperature and superatmospheric pressure for the formation of methanol by partial reaction of the oxides of carbon with the hydrogen in said reaction stream, the improvement comprising (c) separating the product of step (b) above into a methanol-containing stream and a recycle stream comprising unreacted hydrogen, unreacted oxides of carbon and methane; (d) recycling a first part of said recycle stream, which first part contains hydrogen and oxides of carbon, to step (b); (e) recycling a second part of said recycle stream, which second part contains methane, to step(a); (f) immersing, at least partially and for deriving the heat for the steam reforming step, said reaction vessel in a fluidized bed of finely divided solid which is heated at least in part by the combustion of a solid fossil based fuel; and (g) incorporating into said reaction stream for step (b) carbon dioxide provided from flue gas formed by the combustion of said solid, fossil based fuel.

4,395,496

CURED CELLULOSE ESTER, METHOD OF CURING SAME, AND USE THEREOF

Joseph W. Wittmann, and John M. Evans, both of Rochester, N.Y., assignors to UCO Optics, Inc., Rochester, N.Y.

Filed Nov. 16, 1981, Ser. No. 321,506

Int. Cl.³ C08G *77/20, 77/04*; C08L *1/02*; G03B *21/46*

U.S. Cl. 523—107 **28 Claims**

1. A shaped transparent contact lens of concavo-convex shape with the concave surface substantially conforming to the cornea of the eye, said lens being formed of a composition from the polymerization of a composition comprising an organic cellulose ester selected from the group of cellulose acetate, cellulose acetate butyrate, cellulose acetate propionate or mixtures thereof; and a polymerizable ethylenically unsaturated silicone ester.

4,395,497

PREPARATION OF ELECTRICALLY CONDUCTIVE SOLUBLE HETEROPOLYPHENYLENES

Herbert Naarmann, Wattenheim; Dieter Naegele, Worms; Klaus Penzien, Frankenthal, and Johannes Schlag, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

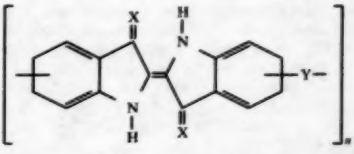
Filed Jun. 15, 1981, Ser. No. 273,688

Claims priority, application Fed. Rep. of Germany, Jul. 8, 1980, 3025771

Int. Cl.³ C08L *77/02*

U.S. Cl. 523—135 **7 Claims**

1. A process for the preparation of an electrically conductive heteropolyphenylene having a conductivity greater than 10^{-2} S/cm, wherein from 0.5 to 5 percent by weight, based on heteropolyphenylene employed, of an activating additive is introduced, in the absence of moisture and of oxygen, into a heteropolyphenylene of the formula



(I)

where X is O, S or Se, Y has one of the meanings given for X or is SO, SO_2 NH, CH_2, CO or phenylene and n is from 2 to 250.

4,395,498

HIGH TEMPERATURE PHENOLIC RESINS AND FRICTION ELEMENTS PREPARED THEREFROM

Judith L. Benham, Stillwater, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

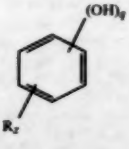
Filed Sep. 18, 1981, Ser. No. 303,554

Int. Cl.³ C08G *14/04*

U.S. Cl. 523—158 **18 Claims**

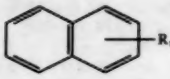
1. A composition of matter heat stable to at least 371° C. comprising a physical blend of

a. 10 to 95 weight percent, based on resin solids, of a curable resin which is the acid-catalyzed reaction product of (1) at least one phenolic compound having the formula



wherein each R independently represents an aliphatic group of 1 to 20 carbon atoms, or an aryl group having 6 to 12 carbon atoms, g is 1, 2, or 3, and z is 0, 1, or 2;

(2) at least one naphthalenic compound having the formula



wherein each R^1 independently is a halo or an aliphatic group of 1 to 15 carbon atoms, and v is 0, 1, 2, and 3; and

(3) formaldehyde;

the mole ratio of naphthalenic compound:phenolic compound-:formaldehyde in said composition being in the range of 1:0.8-5:1-10,

b. 5 to 90 weight percent, based on curable binder resin solids, of prior art resins selected from bodied cashew nut shell liquid resin, bodied linseed oil resin, oil-modified phenolic resins, and mixtures thereof.

4,395,499

HIGH STRENGTH PIGMENT BINDERS FOR PAPER COATINGS CONTAINING CARBOXYLATED VINYL ESTER ALKYL ACRYLIC INTERPOLYMERS

Josephine M. Rosenski, North Plainfield, and Joseph M. Fernandez, Plainsboro, both of N.J., assignors to National Starch And Chemical Corporation, Bridgewater, N.J.

Filed Sep. 13, 1982, Ser. No. 417,291

Int. Cl.³ B32B *23/08, 27/10*

U.S. Cl. 523—206 **11 Claims**

1. A pigmented paper coating composition comprising an aqueous synthetic polymer latex binder, pigment and sufficient alkali to achieve a pH of 6 to 10, the latex comprising dispersed therein an interpolymer having a T_g value of $+30°$ to $-40°$ C. which consists essentially of:

(a) a vinyl ester of an alkanoic acid having one to 13 carbon atoms interpolymerized with the following comonomers:

(b) from 0 to 75% by weight of an alkyl acrylate;

(c) from 0.01 to 1 parts per 100 parts (a) and (b) of a polyethylenically unsaturated comonomer selected from the group consisting of triallyl cyanurate, triallyl isocyanurate, diallyl maleate, diallyl fumarate, divinyl benzene and diallyl phthalate; and

(d) from 0.5 to 15 parts per 100 parts (a) and (b) of an ethylenically unsaturated mono- or dicarboxylic acid or the half esters thereof.

4,395,500

PROTECTIVE COLLOID-FREE PLASTICS DISPERSION HAVING A BIMODAL PARTICLE SIZE DISTRIBUTION

Gernot Löhr, Mainz, and Rolf Reinecke, Wiesbaden, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Sep. 29, 1981, Ser. No. 306,875

Claims priority, application Fed. Rep. of Germany, Oct. 1, 1980, 3036969

Int. Cl.³ C08L *25/14*

U.S. Cl. 523—221 **3 Claims**

1. A protective colloid free plastics aqueous dispersion having a bimodal particle size distribution, wherein the plastics portion consists of from 60 to 80 weight % of a coarse-grain polymer having an average particle size of more than 0.25 μm and from 40 to 20 weight % of a fine-grain polymer having an average particle size of below 0.2 μm, the average particle size ratio of said coarse-grain polymer to said fine-grain polymer being at least 2:1, and wherein the coarse-grain polymer and the fine-grain polymer are copolymers consisting essentially of styrene and/or esters of acrylic acid or esters of methacrylic acid and, optionally, unsaturated acids or amides of unsaturated acids in an amount of below 10 weight percent (relative to the total monomers) and, optionally, monomers capable of being cross-linked in an amount of up to 5 weight percent (relative to the total of monomers).

4,395,501

POLYMER-CARBON BLACK MIXING

George J. Briggs, and Yung-Kang Wei, both of Sarnia, Canada, assignors to Polysar Limited, Sarnia, Canada

Filed Aug. 4, 1981, Ser. No. 289,993

Claims priority, application Canada, Oct. 31, 1980, 363667

Int. Cl.³ C08K *3/04*

U.S. Cl. 523—351 **16 Claims**

1. A process for producing a vulcanizate having improved properties, said process comprising the steps of:

(a) mixing in at least two separate steps two or more C_4 or C_5 conjugated diolefin containing polymers with carbon black and other compounding ingredients except cure active agents, followed by resting of the compounds so produced,

(b) mixing the compounds from (a) with other compounding ingredients including sulphur and sulphur-containing or peroxidic cure active agents,

(c) shaping the mixture from (b), and

(d) vulcanizing the shaped mixture by heating at a temperature of from about 145° C. to about 225° C. for a time of from about 3 to about 60 minutes,

characterized in that in step (a), the polymers are mixed in at least two separate steps wherein:

(i) about 33 to about 60 weight percent of one or more of the polymers is mixed with from about 60 to 100 weight percent of the carbon black and with other compounding ingredients except cure active agents, said polymers being selected from C_4 or C_5 conjugated diolefin containing synthetic polymers,

(ii) about 67 to about 40 weight percent of one or more of the polymers is mixed with from 0 to about 40 weight percent of the carbon black and with other compounding ingredients except cure active agents, said polymers being selected from C_4 or C_5 conjugated diolefin containing synthetic polymers and natural rubber, such mixing of polymers, carbon black and other compounding ingredients being in a single mix or in separate mixes containing only a single polymer,

(iii) the compounds from (i) and (ii) are supplied to step (b).

4,395,502

CATHODICALLY DEPOSITABLE COATING COMPOSITIONS FOR ELECTRODEPOSITION (II)

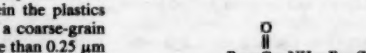
Helmut Hönig, and Georgios Pampouchidis, both of Graz, Austria, assignors to Vianova Kunstharz, A. G., Vienna, Austria

Filed Dec. 1, 1977, Ser. No. 854,628

Int. Cl.³ C08L *63/02*

U.S. Cl. 523—415 **7 Claims**

1. A coating composition which is cathodically deposited when used in an electrodeposition process comprising as the coating binder, an aqueous emulsion of 98 to 50 percent by weight of at least one self-crosslinking cationic binder based on a modified epoxy compound, water-dilutable upon partial or total neutralization with inorganic and/or organic acids, and 2 to 50 percent by weight of a urethane of the general formula



wherein R represents an aromatic, cycloaliphatic, or aliphatic hydrocarbon radical; R_1 stands for a hydroxyethyl(meth)acrylate or a hydroxypropyl(meth)acrylate radical; R_2 is the radical of a member of the group consisting of an aliphatic monoalcohol with at least 6 carbon atoms, an alkyl radical with at least 6 carbon atoms, and an alkylene radical with at least 6 carbon atoms; and n is an integer of 1 to 2.

4,395,503

ANTENNA GROUT REPLACEMENT SYSTEM

Charles E. McClung, Kettering, Ohio, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Feb. 10, 1981, Ser. No. 233,271
Int. Cl.³ C08L 63/00
U.S. Cl. 523—440 9 Claims

1. A fast-curing, non-sagging, oil-compatible, support grout consisting essentially of between 10–20% by weight of epoxy resin; 80–90% by weight of inert, inorganic filler having a mesh size below 10, less than 5% by weight of colloidal silica thickening agent and a fast curing agent for said epoxy resin in an amount effective to cure said epoxy resin in less than one minute to a rigid, cured state which is dimensionally stable under high loads and high pressures.

4,395,504

ADHESIVE SYSTEM FOR PARTICLEBOARD MANUFACTURE

Theodore Sulzberg, Highland Park, and Chi Ma, Parsippany, both of N.J., assignors to Sun Chemical Corporation, New York, N.Y.

Filed Sep. 7, 1982, Ser. No. 415,143
Int. Cl.³ B32B 21/02; C08G 12/12; C08L 1/00
U.S. Cl. 524—14 5 Claims

1. In a particleboard that comprises particles of wood and a formaldehyde-free resin adhesive system, the improvement wherein the resin adhesive system comprises the product of the reaction of a cyclic urea and glyoxal in the equivalent ratio of about 1.1–1.5:1.

4,395,505

ASCENSION PIPE AND ASCENSION PIPE CAP SEALERS FOR BY-PRODUCT COKE OVENS

Ronald S. Doles, Oak Lawn, Ill., assignor to Nalco Chemical Company, Oak Brook, Ill.

Filed Jun. 14, 1982, Ser. No. 387,914
Int. Cl.³ C03C 5/02; C04B 35/00
U.S. Cl. 524—55 10 Claims

1. A curable composition useful in oven sealers comprising an aqueous solution of a composition which is a combination of silica and from about 44–75% by weight of a water-soluble borate having a curing temperature in the range of about 400°–775° C. and each having a particle size in the range of 44–210 microns.

3. The composition according to claim 1 having the following weight percent analysis which, when heated to 750° C. forms a viscous glass with a composition of 52.3% B_2O_3 and 37.7% SiO_2:

62.00% Boric acid
21.00% Silica
2.85% Vinyl acetate/acrylic emulsion polymer
14.00% Water
0.15% Xanthan gum.

4,395,506

ADDITION OF MINERAL RUBBER TO HALOBUTYL BLENDS

Hayao Nagano, Yokohama, Japan, and Bernard J. Costemalle, Rhode-Saint-Genese, Belgium, assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Jun. 15, 1981, Ser. No. 273,314
Claims priority, application Japan, Jun. 13, 1980, 55-80088
Int. Cl.³ C08L 95/00
U.S. Cl. 524—68 5 Claims

1. A rubber composition having high cured adhesion to high unsaturation rubber compounds comprising chlorobutyl and bromobutyl rubbers and up to about 20 parts by weight per 100 parts of the total amount of chlorobutyl and bromobutyl rubbers of a mineral rubber.

4,395,507

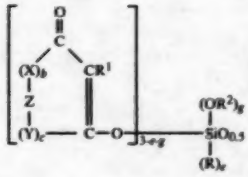
SELF-BONDING ONE-COMPONENT DIMEDONE RTV SILICONE RUBBER COMPOSITIONS

John J. Dziark, Ballston Spa, N.Y., and Kazuto Shinohara, Ohta, Japan, assignors to General Electric Silicones, Waterford, N.Y.

Filed Dec. 16, 1981, Ser. No. 331,232
Int. Cl.³ C08K 5/34
U.S. Cl. 524—101 110 Claims

1. A self-bonding one-component RTV silicone rubber composition comprising (A) 100 parts by weight of an organopolysiloxane consisting essentially of chemically combined units of the formula,

and having terminal alkoxysiloxy units of the formula,



where R is a $C_{(1-13)}$ monovalent organic radical, R^1 is selected from hydrogen, halogen and R, R^2 is a $C_{(1-8)}$ alkyl radical, X and Y are divalent radicals selected from —O—, —S—, and

Z is a divalent $C_{(1-13)}$ organic radical selected from alkylene, cycloalkylene, arylene and a fused ring structure, b and c are equal to 0 or 1, R^3 is selected from hydrogen and R, e is a whole number having a value of 0 or 1, g is equal to 1 or 2, and the sum of e+g is equal to 1 or 2; (B) from 3 to 8 parts by weight of an adhesion promoter which is selected from the class consisting of silyl maleates, silyl fumarates, silyl succinates, silyl isocyanurates and mixtures thereof.

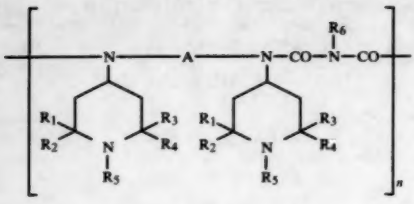
4,395,508

POLYCONDENSATES OF SUBSTITUTED PIPERIDINES AND USE THEREOF AS STABILIZERS FOR POLYMERS

Giuseppe Nelli, and Roberto Oriani, both of Milan, Italy, assignors to Montedison S.p.A., Milan, Italy

Continuation of Ser. No. 163,085, Jun. 26, 1980, abandoned.
This application Jul. 29, 1981, Ser. No. 287,908
Claims priority, application Italy, Jun. 28, 1979, 23947 A/79
Int. Cl.³ C08K 5/34, 5/16; C08G 73/00; C07D 211/30
U.S. Cl. 524—103 15 Claims

1. Polyamides having the general formula (II):



(II)

wherein: each of R_1, R_2, R_3 and R_4, which may be the same or different, is an alkyl radical having 1 to 4 carbon atoms; R_5 is hydrogen or an alkyl radical having 1 to 4 carbon atoms; R_6 is hydrogen, an alkyl radical having 1 to 20 carbon atoms, a cycloalkyl radical having 3 to 10 carbon atoms, an aryl radical or an alkyl-aryl radical having from 6 to 20 carbon atoms; A is an alkylene radical having 3 to 10 carbon atoms or a cycloalkylene radical having 3 to 10 carbon atoms, and n is an integer from 2 to 100.

4,395,509

POLY(ARYLENE SULFIDE) COMPOSITION SUITABLE FOR MOLDING

Jennings P. Blackwell; Dale O. Tieszen, both of Bartlesville, Okla., and Jack G. Scruggs, Greenville, S.C., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 2, 1982, Ser. No. 354,129

Int. Cl.³ C08L *81/04*

U.S. Cl. 524—127 **11 Claims**

1. A composition suitable for molding comprising:

(a) from about 30 to about 50 weight percent poly(arylene sulfide),

(b) from about 10 to about 30 weight percent glass fibers,

(c) from about 30 to about 60 weight percent of a component chosen from glass beads, fused silica and mixtures thereof, and

(d) from about 0.5 to about 2 weight percent of a processing aid chosen from N,N'-alkylenebis(alkanamides), glycerides and phosphated glycerides of saturated fatty acids, containing from 10 to 30 carbon atoms, mono- and dialkanolamides derived from saturated fatty acids and esters derived from a saturated long-chain fatty acid and long-chain saturated aliphatic alcohol.

4,395,510

NOVEL OLEFIN POLYMER COMPOSITIONS AND FOAMED ARTICLES PREPARED THEREFROM HAVING IMPROVED ELEVATED TEMPERATURE DIMENSIONAL STABILITY

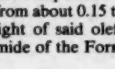
Chung P. Park, Pickerington, Ohio, assignor to The Dow Chemical Co., Midland, Mich.

Division of Ser. No. 375,606, May 6, 1982, Pat. No. 4,368,276, which is a continuation-in-part of Ser. No. 267,207, May 26, 1981, abandoned, which is a continuation-in-part of Ser. No. 154,333, May 29, 1980, abandoned. This application Sep. 24, 1982, Ser. No. 422,768

Int. Cl.³ C08K *5/20*; C08J *9/14*

U.S. Cl. 524—230 **9 Claims**

1. An olefin polymer composition consisting essentially of an olefin polymer and from about 0.15 to about 10 weight percent based upon the weight of said olefin polymer of an N-substituted fatty acid amide of the Formula:



(I)

wherein R_1 represents an alkyl group of from about 11 to about 17 carbon atoms and R_2 represents an alkyl group of from about 12 to about 18 carbon atoms, said N-substituted fatty acid amide being selected from the group consisting of N-lauryl lauric acid amide, N-lauryl myristamide, N-myristyl myristamide, N-palmityl myristamide, N-lauryl palmitamide, N-myristyl palmitamide, N-palmityl palmitamide, N-palmityl stearamide and N-stearyl stearamide; said N-substituted fatty acid amide being employed in an amount such that if said olefin polymer composition is foamed by extrusion using a volatile organic blowing agent, the presence of said fatty acid amide prevents the freshly prepared foam from shrinking by more than 10% from its initially foamed volume when subjected to prolonged exposure to atmospheric pressure air at 150° F.

4,395,511

HEAT SEALABLE, FLAME AND ABRASION RESISTANT COATED FABRIC

Richard P. Tschirch, Westwood, and Kenneth R. Sidman, Wayland, both of Mass., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Division of Ser. No. 145,107, Apr. 30, 1980, Pat. No. 4,284,682. This application Mar. 6, 1981, Ser. No. 241,155

Int. Cl.³ C08K *5/06*

U.S. Cl. 524—371 **3 Claims**

1. A flame retardant elastomeric composition for coating fabrics made from synthetic or natural fibers, the coating being flexible, abrasion resistant, and heat sealable, which elastomeric composition comprises from about 30 to about 60 percent by weight of a soluble, thermoplastic polyurethane and from about 70 to about 40 weight percent of a flame retardant additive selected from the group consisting of decabromodiphenyloxide and antimony oxide in a weight ratio of 3:1, respectively, and decabromodiphenyloxide, antimony oxide, and ammonium polyphosphate in a weight ratio of 3:1:3, respectively.

4,395,512

POLYPHENYLENESULFIDE RESIN COMPOSITION

Yoshihiro Kubota, Takasaki, and Osamu Kuriyama, Annaka, both of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed May 24, 1982, Ser. No. 381,563

Claims priority, application Japan, Jun. 8, 1981, 56-87945

Int. Cl.³ C08K *3/10*

U.S. Cl. 524—413 **2 Claims**

1. A polyphenylenesulfide resin composition which comprises

(a) 100 parts by weight of a polyphenylenesulfide resin,

(b) from 10 to 300 parts by weight of an inorganic filler, and

(c) from 1 to 100 parts by weight of a fluorine-containing rubber having a Mooney viscosity as specified by ASTM D 1646 in the range from 5−ML1+10 (100° C.) to 300−ML1+10 (121° C.)

4,395,513

HIGH PERFORMANCE THERMALLY STABLE POLY(6-OXY-2-NAPHTHOATE)

Gordon W. Calundann, Plainfield, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed Apr. 8, 1982, Ser. No. 366,679

Int. Cl.³ C08G *63/06*

U.S. Cl. 524—599 **11 Claims**

1. A high performance thermally stable polymer consisting of recurring 6-oxy-2-naphthoyl moieties and 0 to approximately 3 mole percent of other ester-forming and/or amide-forming moieties which include at least one aromatic ring.

4,395,514

PROCESS FOR PREPARING A CARBON FIBER REINFORCED COMPOSITE ARTICLE WHICH UTILIZES A POLYIMIDE MATRIX

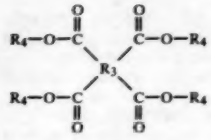
Robert Edelman, Staten Island, N.Y., assignor to Celanese Corporation, New York, N.Y.

Division of Ser. No. 141,701, Apr. 18, 1980, Pat. No. 4,338,430.
This application Jan. 29, 1982, Ser. No. 343,868
Int. Cl.³ C08L 67/02
U.S. Cl. 524—600 7 Claims

1. A process for preparing a carbon fiber reinforced composite article wherein a polyimide constitutes the continuous phase which comprises:

(1) providing a polyimide forming catalyst-monomer mixture comprising:

(a) at least one ester of the formula:



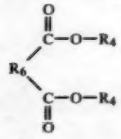
wherein R_3 is a tetravalent aryl radical, and R_4 is selected from the group consisting of a lower alkyl radical having 1 to 4 carbon atoms, and hydrogen, with two R_4 groups being alkyl and two R_4 groups being hydrogen;

(b) at least one amine of the formula:

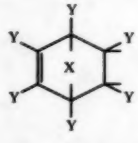
$$H_2N—R_5—NH_2$$

wherein R_5 is a divalent aryl radical; and

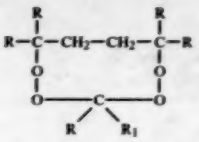
(c) at least one ester of the formula:



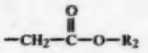
wherein R_4 is selected from the group consisting of a lower alkyl radical having 1 to 4 carbon atoms, and hydrogen with one R_4 group being alkyl and one R_4 group being hydrogen, and R_6 is a divalent radical of the formula:



wherein Y, which is the same or different, is selected from the group consisting of hydrogen, and methyl and X is an alkylidene radical of from 1 to 6 carbon atoms; wherein monomers (a), (b) and (c) are present in said mixture at a molar ratio of n:(n+x):y respectively, wherein n is an integer of from about 1 to about 20, x is an integer of from about 0.5 to about 1, and y is an integer of from about 1.5 to about 2, and from about 0.5 to about 15%, by weight, based on the weight of the monomer mixture, of at least one peroxide catalyst represented by the structural formula:



wherein R, which is the same or different, is a lower alkyl group having from 1 to about 3 carbon atoms, and R_1 is an alkyl acetate group of the formula:



wherein R_2 is an alkyl group having from 1 to about 4 carbon atoms;

(2) impregnating at least one carbon fiber lamina with said polyimide forming catalyst-monomer mixture of step (1);

(3) reacting said polyimide forming catalyst-monomer mixture in the presence of the at least one carbon fiber lamina at a temperature of from about 250° to about 350° F. for a period of from about 0.5 to about 3 hours and at a pressure of from about 2 to about 30 in.Hg to form a prepolymer; and

(4) curing the prepolymer to form a carbon fiber reinforced composite article while employing a short cure procedure which comprises the steps of heating the prepolymer to a temperature of from about 375° to about 425° F. at a continuous or intermittent pressure of from about 175 to about 225 psi; raising the temperature of the prepolymer to a temperature of from about 450° to about 625° F. while under a continuous or intermittent pressure of from about 175 to about 225 psi; and maintaining the temperature of the prepolymer thereat for a period of about 10 to about 120 minutes.

4,395,515

RESIN DISPERSIONS HAVING HIGH PIGMENT BINDING CAPACITY

Horst Dinklage, Dieburg; Herbert Fink, Bickenbach; Peter Frank, Seeheim-Jugenheim; Hubert Rauch, Weiterstadt, and Werner Siol, Pfungstadt, all of Fed. Rep. of Germany, assignors to Röhm GmbH, Darmstadt, Fed. Rep. of Germany

Filed Dec. 24, 1981, Ser. No. 334,228
Claims priority, application Fed. Rep. of Germany, Jan. 22, 1981, 3101892
Int. Cl.³ C08L 33/02
U.S. Cl. 524—832 10 Claims

1. A method for making an aqueous dispersion of a synthetic resin copolymer by the free radical copolymerization of from 92 to 97 percent, by weight of the copolymer, of water insoluble ethylenically unsaturated monomers and from 3 to 8 percent, by weight of the copolymer, of an acid component selected from the group consisting essentially of α,β-ethylenically unsaturated mono- and di-carboxylic acids and the water soluble salts thereof, the weight of salt in each instance being calculated as the weight of the corresponding free acid, said dispersion having high pigment binding capacity, which method comprises gradually adding said water insoluble monomers, under free radical copolymerization conditions, together with a portion of said acid component which is at least 2 percent by weight of the copolymer, to an aqueous medium comprising from 1 to 4 percent, by weight of the copolymer, of at least one water soluble salt of a mono- or di-carboxylic acid forming the remainder of said acid component.

4,395,516

THERMOPLASTIC RESIN COMPOSITIONS COMPRISING COPOLYMER OF UNSATURATED DICARBOXYLIC ACID ANHYDRIDE AND VINYL AROMATIC MONOMER, ABS, AND METHYLMETHACRYLATE POLYMER

Tatuhiko Imai, and Akira Ohi, both of Sakai, Japan, assignors to Daicel Chemical Industries, Ltd., Osaka, Japan

Filed Dec. 21, 1981, Ser. No. 332,892
Claims priority, application Japan, Dec. 26, 1980, 55/186163
Int. Cl.³ C08L 55/02, 25/08, 33/12
U.S. Cl. 525—71 10 Claims

1. A thermoplastic molding composition which consists essentially of a blend of

(A) from 5 to 95 wt. % of a copolymer consisting essentially of

(1) from 5 to 50 wt. % of an unsaturated dicarboxylic acid anhydride,

(2) from 50 to 95 wt. % of a vinyl aromatic monomer,

(3) from 0 to 30 wt. % of a vinyl cyanide monomer, alkyl acrylate monomer or alkyl methacrylate monomer, and

(4) from 0 to 50 wt. % of a rubber

(B) from 5 to 95 wt. % of an ABS resin containing from 2 to 70 wt. %, based on said ABS resin, of a butadiene rubber, and

(C) from 0.1 to 20 wt. %, per 80 to 99.9 wt. % of the sum of the amounts of (A) plus (B), of thermoplastic acrylic resin different from (A) and (B) and which is a copolymer or multi-stage polymer containing at least 20 wt. % of methyl methacrylate, based on said acrylic resin.

4,395,517

MODIFIED OLEFINE POLYMERS

Helmut Waniczek, Cologne; Carlhans Süling, Odenthal; Christian Lindner, Cologne, and Herbert Bartl, Odenthal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 17, 1981, Ser. No. 274,545
Claims priority, application Fed. Rep. of Germany, Jun. 25, 1980, 3023822
Int. Cl.³ C08L 75/06, 67/00, 69/00
U.S. Cl. 525—168 3 Claims

1. A process for the preparation of modified olefine polymers, wherein 20 to 98 parts by weight of an olefine homopolymer or copolymer, 0.5 to 80 parts by weight of a polymer containing saturated aliphatic polyester blocks and 0.5 to 40 parts by weight of a monomer containing olefinic double bonds are polymerized in the presence of a radical initiator at 50° to 250° C. in the absence of a solvent.

4,395,518

POLYETHERIMIDE-ACRYLATE COPOLYMER BLENDS

Harold F. Giles, Jr., Cheshire, Mass., and Dwain M. White, Schenectady, N.Y., assignors to General Electric Company, Pittsfield, Mass.

Filed Mar. 18, 1982, Ser. No. 359,509
Int. Cl.³ C08L 79/08
U.S. Cl. 525—180 9 Claims

1. A composition comprising a blend of (a) a minor proportion of an acrylate copolymer and (b) a polyetherimide.

4,395,519

PHYSICALLY BLENDED PROPYLENE POLYMER COMPOSITION

Syuji Minami, Ohtake; Norio Kashiwa, Iwakuni; Akifumi Kato, and Junichi Watanabe, both of Ohtake, all of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Continuation of Ser. No. 31,298, Apr. 18, 1979, abandoned. This application Oct. 14, 1980, Ser. No. 196,550
Int. Cl.³ C08L 23/16, 23/12, 23/06
U.S. Cl. 525—240 5 Claims

1. A physically blended propylene polymer composition comprising

(A) 100 parts by weight of crystalline polypropylene containing 0 to 10 mole% of a member selected from the group consisting of ethylene, another α-olefin, and a mixture thereof,

(B) 1 to 30 parts by weight of a propylene/ethylene random copolymer composed of 30 to 85 mole% of propylene, said copolymer containing 0 to 10 mole% of a diene component and having (i) a micro-isotacticity of at least 0.8 and (ii) a boiling n-cyclohexane insolubles content of 0 to 10% by weight, said random copolymer being prepared by using a catalyst comprising a carrier-supported solid titanium catalyst component containing magnesium, halogen, titanium and an electron donor, and an organoaluminum compound catalyst component, and

(C) 0 to 30 parts by weight of polyethylene containing 0 to 15 mole% of an α-olefin, said components (A) and (B) having been physically mixed with each other.

4,395,520

PROCESS FOR CURING THERMOSETTING RESINS USING SULFUR DIOXIDE CONTAINING COMPOUNDS AS LATENT CATALYSTS

Sui-Wu Chow, and George L. Brode, both of Bridgewater Township; Somerville County, N.J., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Jan. 20, 1982, Ser. No. 340,852
Int. Cl.³ C08G 8/28, 8/30, 8/32, 12/40
U.S. Cl. 525—502 16 Claims

1. In a process for the curing of a thermosetting resin which is curable using an acid catalyst, the improvement being the use of a sulfur dioxide containing compound as a latent catalyst, said compound being stable at at a temperature less than about 60° C. and dissociable into sulfur dioxide at a temperature greater than about 100° C.

4,395,521

PROCESS FOR CURING THERMOSET RESINS USING PHENYL ESTERS OF CARBOXYLIC ACIDS AS LATENT CATALYSTS

Sui-Wu Chow, and George L. Brode, both of Bridgewater Township, Somerset County, N.J., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Jan. 20, 1982, Ser. No. 340,854
Int. Cl.³ C08G 8/30, 8/32, 12/40, 12/44
U.S. Cl. 525—502 10 Claims

1. In a process for the curing of a thermosetting resin which

is curable using an acid catalyst, the improvement being the use of a phenyl ester of a carboxylic acid as a latent catalyst, said phenyl ester being hydrolyzable at a temperature greater than 100° C. and in the presence of water to form a carboxylic acid having a pK_a of about 2 or less.

4,395,522

Patent Not Issued For This Number

4,395,523

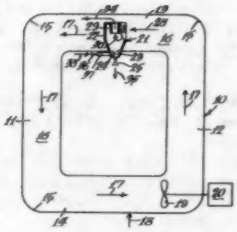
METHOD OF MAKING AND RECOVERING OLEFIN POLYMER PARTICLES

William Kirch, Clinton, Iowa, assignor to Chemplex Company, Rolling Meadows, Ill.

Continuation of Ser. No. 257,222, Apr. 23, 1981, abandoned, which is a continuation-in-part of Ser. No. 71,129, Aug. 30, 1979, abandoned, which is a division of Ser. No. 887,668, Mar. 16, 1978, Pat. No. 4,199,546. This application May 27, 1982, Ser. No. 382,488

Int. Cl.³ C08F 2/14

U.S. Cl. 526—64 **3 Claims**



1. A method for producing and recovering solid polyolefin particles in a particle form olefin polymerization process, comprising:

directing a flowing liquid stream comprising liquid diluent, olefin monomer and catalyst for the polymerization and the resulting polyolefin particles under polymerizing heat and pressure conditions in the flow path through a continuous loop comprising a polymerization zone;

directing a portion of said flowing liquid stream from said loop through a liquid cyclone separator for producing a concentrated slurry of a portion of said particles and a separate relatively clear liquid, while exchanging heat between said flowing liquid stream in said loop and said flowing liquid stream in said separator by immersing said cyclone separator in said flowing liquid stream in said loop at said polymerization zone for maintaining said flowing liquid stream within said separator at substantially the same temperature as said flowing liquid stream in said loop at said polymerization zone to continue said polymerizing conditions while said portion of said flowing liquid stream is passing through said separator;

returning said relatively clear liquid to said polymerization zone; and

directing said concentrated slurry to a place of recovery of said particles.

4,395,524

ACRYLAMIDE COPOLYMER THICKENER FOR AQUEOUS SYSTEMS

William D. Emmons, Huntingdon Valley, and Travis E. Stevens, Ambler, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Apr. 10, 1981, Ser. No. 252,721

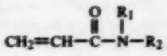
Int. Cl.³ C08F 220/54, 220/56, 220/58

U.S. Cl. 526—307.2 **17 Claims**

1. A nonionic or anionic water-soluble addition copolymer of monomers comprising, by weight,

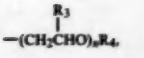
(A) at least 50% of acrylamide;

(B) 0.01 to 50% of a compound having the formula

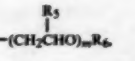


wherein

R_1 is



R_2 is H or



R_3 and R_5 are H or methyl, independently,

R_4 and R_6 are hydrocarbyl having 6 or more carbons, independently, and

m and n are zero or a positive integer, independently; and

(C) 0 to 49.99% one or more other olefinically unsaturated monomers;

the copolymer having a weight average molecular weight greater than 30,000.

4,395,525

HOT MELT ADHESIVES

Hannes Fischer, Taunusstein, and Rolf Zimmermann, Wiesbaden, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 6, 1980, Ser. No. 194,013

Claims priority, application Fed. Rep. of Germany, Oct. 6, 1979, 2940649

Int. Cl.³ C08F 220/06, 220/56

U.S. Cl. 526—307.6 **7 Claims**

1. A hot melt adhesive having a good heat stability comprising a copolymer of

(a) from 85 to 95% by weight of an alkylester of at least one carboxylic acid selected from the group consisting of acrylic and methacrylic acid each having 1 to 12 carbon atoms in the alkyl radical,

(b) from 3 to 10% by weight of at least one acrylic or methacrylic amide or mixture thereof,

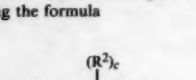
(c) from 0.2 to 3% by weight of at least one olefinically unsaturated carboxylic acid having at most 2 carboxylic groups and having up to 5 carbon atoms wherein the total of the percentages is always 100 and wherein the copolymer has a melt viscosity of 20 to 80 Pa.s/180° C.

4,395,526
ONE PACKAGE, STABLE, MOISTURE CURABLE, POLYALKOXY-TERMINATED ORGANOPOLYSILOXANE COMPOSITIONS AND METHOD FOR MAKING

Mary A. White; Melvin D. Beers, both of Schenectady; Gary M. Lucas, Scotia; Robert A. Smith, and Roger T. Swiger, both of Schenectady, all of N.Y., assignors to General Electric Company, Waterford, N.Y.

Filed Jun. 26, 1981, Ser. No. 277,524
Int. Cl.³ C08G 77/06
U.S. Cl. 528—18 **36 Claims**

1. A stable, one-package, substantially anhydrous and substantially acid-free, room temperature vulcanizable organopolysiloxane composition stable under ambient conditions in the substantial absence of moisture over an extended period of time and convertible to a tack-free elastomer comprising: (1) an organopolysiloxane wherein the silicon atom at each polymer chain end is terminated with at least 2 alkoxy radicals; (2) an effective amount of a condensation catalyst; (3) a stabilizing amount of silane scavenger for hydroxy functional groups having the formula



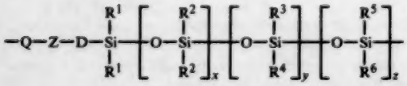
where R^1 is a $C_{(1-8)}$ aliphatic organic radical selected from the group consisting of alkyl, alkylether, alkylester, alkylketone, and alkylcyano radicals, or a $C_{(7-13)}$ aralkyl radical, R^2 is a $C_{(1-13)}$ monovalent substituted or unsubstituted hydrocarbon radical, X is a hydrolyzable leaving group selected from the group consisting of amido, amino, carbamato, enoxy, imidato, isocyanato, oximato, thioisocyanato and ureido radicals and, c is a whole number equal to 0 to 3 inclusive, f is an integer equal to 1 to 4 inclusive and the sum of c+f is equal to 1 to 4 inclusive; and where X is enoxy or amido, (4) an effective amount of a curing accelerator selected from the group consisting of substituted guanidines, amines and mixtures thereof.

4,395,527
SILOXANE-CONTAINING POLYMERS

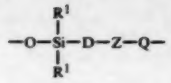
Ade Berger, Summit, N.J., assignor to M & T Chemicals Inc., Woodbridge, N.J.

Continuation-in-part of Ser. No. 158,056, Jun. 9, 1980, abandoned, Ser. No. 174,400, Aug. 1, 1980, abandoned, Ser. No. 51,840, Jun. 25, 1979, Ser. No. 126,666, Mar. 3, 1980, abandoned, Ser. No. 205,120, Nov. 10, 1980, abandoned, and Ser. No. 51,699, Jun. 25, 1979, abandoned, said Ser. No. 158,056, which is a continuation-in-part of Ser. No. 958,358, Nov. 6, 1978, abandoned, said Ser. No. 51,840, and Ser. No. 126,666, each is a continuation-in-part of Ser. No. 11,901, Feb. 13, 1979, abandoned, which is a continuation-in-part of Ser. No. 906,877, May 17, 1978, Pat. No. 4,139,547, said Ser. No. 205,120, which is a continuation-in-part of Ser. No. 16,412, Mar. 1, 1979, abandoned, said Ser. No. 174,400, Ser. No. 16,412, and Ser. No. 51,699, each is a continuation-in-part of Ser. No. 907,155, May 17, 1978, abandoned. This application Dec. 15, 1980, Ser. No. 216,599
Int. Cl.³ C08G 77/04
U.S. Cl. 528—26 **31 Claims**

1. A polymeric composition comprising a polyimide, poly(amide-imide) or a poly(half-amide) polymer containing a thermally stable siloxane unit of formula



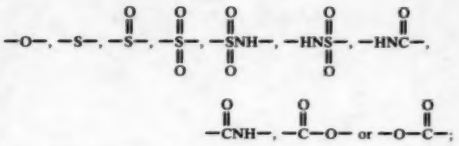
-continued



where

Q is a substituted or unsubstituted aromatic group

Z is



D is unsubstituted or substituted hydrocarbylene;

R^1, R^2, R^3, R^4, R^5 and R^6 each independently is unsubstituted or substituted hydrocarbyl;

x, y and z each independently has a value from 0 to 100.

4,395,528
CATALYST COMPOSITION AND CURABLE POLYMER COMPOSITIONS CONTAINING SAME

Howard H. Leiner, Cranbury, and Emily C. Bossert, Westfield, both of N.J., assignors to M&T Chemicals Inc., Woodbridge, N.J.

Filed Mar. 2, 1981, Ser. No. 239,874
Int. Cl.³ C08G 18/80; B01J 31/12
U.S. Cl. 528—45 **31 Claims**

1. A composition for catalyzing the curing reaction between a blocked organic polyisocyanate and a polymer having hydroxyl groups capable of reacting with polyisocyanates said catalyst composition comprising:

(1) a divalent metal compound selected from the group consisting of salts and chelated coordination complexes of copper^{II}, zinc^{II}, nickel^{II}, iron^{II}, cobalt^{II} and vanadium^{II} and

(2) an amount of a tin-containing urethane catalyst sufficient to increase the catalytic effectiveness of said divalent metal compound wherein said tin-containing catalyst is present in an amount from about 10% by weight of the combined weight of said divalent metal compound and tin-containing urethane catalyst in said composition.

11. A curable polymeric composition comprising

(a) a polymeric component containing pendant hydroxyl groups capable of reacting with polyisocyanates and an organic polyisocyanate component containing at least two blocked isocyanate groups or a polymeric component containing both pendant hydroxyl groups and blocked isocyanate groups, and

(b) a catalytically effective amount of a catalyst composition comprising a divalent metal compound selected from the group consisting of salts and chelated coordination complexes of copper^{II}, zinc^{II}, nickel^{II}, iron^{II}, cobalt^{II}, and vanadium^{II} and a tin-containing urethane catalyst in an amount sufficient to increase the catalytic effectiveness of said divalent metal compound and wherein said tin-containing catalyst constitutes from about 10% by weight of the combined weight of divalent metal and tin-containing catalyst.

4,395,529

COATING POWDERS FOR PROTECTIVE FILMS BASED ON EPSILON-CAPROLACTAM BLOCKED ISOCYANATES

K. A. Pai Panandiker, Maple Grove, and Charles Danick, Plymouth, both of Minn., assignors to Cargill, Incorporated, Minneapolis, Minn.

Filed Jul. 20, 1981, Ser. No. 285,353
Int. Cl.³ C08G 18/80, 18/75
U.S. Cl. 528—45 8 Claims

1. A coating composition which comprises a molar mixture of E-caprolactam blocked polyisocyanate and E-caprolactam blocked diisocyanate in a ratio in a range of about 1:0 to about 1:1.5,

said blocked polyisocyanate comprising the reaction product of a polyhydric compound and a diisocyanate,

said diisocyanate being selected from the group consisting of 1,4-bis(isocyanatomethyl)cyclohexane, 1,3-bis-(isocyanatomethyl)cyclohexane and mixtures thereof,

said polyhydric compound being selected from the group consisting of trimethylol propane, trimethylol ethane, glycerine, E-caprolactone, and mixtures thereof; and

a film forming hydroxy containing polyester.

4,395,530

CATALYST INITIATED PREPOLYMER SYSTEMS

James A. Hammond, Redlands, Calif., assignor to Colamco, Inc., Columbus, Ohio

Continuation of Ser. No. 200,199, Oct. 24, 1980, abandoned.
This application Nov. 27, 1981, Ser. No. 325,315
Int. Cl.³ C08G 18/24, 18/12
U.S. Cl. 528—48 30 Claims

1. A process for manufacturing a polyurethane prepolymer adhesive under room temperature conditions comprising the steps of:

(a) introducing a predetermined amount of at least one polyol reactant into a reaction vessel;

(b) mixing a predetermined amount of least one isocyanate reactant into the reaction vessel to give a uniform resin mixture sufficient to give an excess active isocyanate content in the polyurethane prepolymer adhesive of approximately 5% to 20% by weight;

(c) adding a predetermined amount of catalyst to initiate reaction of the reactants in the reaction vessel, with vigorous stirring to give a uniform mixture, said predetermined amount of catalyst being sufficient to allow the reaction to substantially reach completion within 2 to 8 hours;

(d) isolating the mixed contents in the reaction vessel from ambient conditions to prevent contamination of the contents by ambient moisture; and

(e) mixing the reactants during the reaction in the reaction vessel until the reaction substantially subsides, whereby the polyurethane prepolymer adhesive is formed.

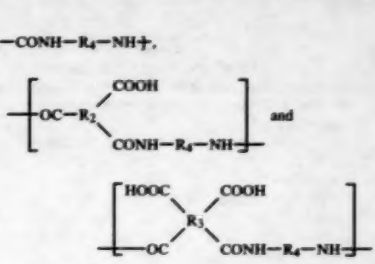
4,395,531

PROCESS FOR THE PREPARATION OF POLYAMIDE COMPOUNDS BY THE REACTION OF POLYCARBOXYLIC ACIDS WITH DIISOCYANATES IN THE PRESENCE OF AT LEAST ONE MONO-ALKALI METAL SALT OF DICARBOXYLIC ACID

Toshihiro Toyoda; Motoo Kawamata; Masanori Osawa; Masayoshi Itoh; Kazumi Mizutani, all of Yokohama, and Masahiro Kono, Kanagawa, all of Japan, assignors to Mitsui Toatsu Chemical Incorporated, Japan

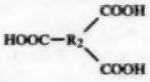
Filed Feb. 23, 1982, Ser. No. 351,602
Claims priority, application Japan, Mar. 14, 1981, 56/37132; Apr. 28, 1981, 56/63328
Int. Cl.³ C08G 18/34
U.S. Cl. 528—49 13 Claims

1. In a process for the preparation of a polyamide compound having one or more repeating units selected from the group consisting essentially of repeating units of the general formulas

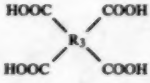


by reacting at least one polycarboxylic acid selected from the group consisting of dicarboxylic acids of the general formula

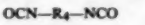
tricarboxylic acids of the general formula



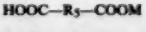
and tetracarboxylic acids of the general formula



with at least one diisocyanate of the general formula



where R_1 is a divalent radical containing at least two carbon atoms or such a radical additionally having one or more substituents comprising radicals or atoms that are unreactive or scarcely reactive with carboxyl or isocyanate groups, the two carbonyl groups adjacent to the R_1 radical being attached to two different carbon atoms contained in the R_1 radical, R_2 is a trivalent radical containing at least three carbon atoms or such a radical additionally having one or more substituents comprising radicals or atoms that are unreactive or scarcely reactive with carboxyl or isocyanate groups, two of the three carbonyl groups adjacent to the R_2 radical being attached to two adjacent carbon atoms contained in the R_2 radical and the remaining one being attached to another carbon atom contained in the R_2 radical, R_3 is a tetravalent radical containing at least four carbon atoms or such a radical additionally having one or more substituents comprising radicals or atoms that are unreactive or scarcely reactive with carboxyl or isocyanate groups, the four carbonyl groups adjacent to the R_3 radical being attached to four different carbon atoms contained in the R_3 radical and constituting two different pairs of adjacent carbon atoms, and R_4 is a divalent radical containing at least two carbon atoms or such a radical additionally having one or more substituents comprising radicals or atoms that are unreactive or scarcely reactive with carboxyl or isocyanate groups, the two nitrogen atoms adjacent to the R_4 radical being attached to two different carbon atoms contained in the R_4 radical, the improvement which comprises effecting the reaction in the presence of at least one mono-alkali metal salt of dicarboxylic acid of the general formula



where R_5 is a divalent radical defined similarly to R_1 but may

be the same as or different from R_1, and M is an alkali metal belonging to the group I_A in the periodic table.

4,395,532

COATING COMPOSITION

Herman A. Bruson, deceased, late of Woodbridge, Conn., and by Virginia H. Bruson, executrix, 98 Ansonia Rd., Woodbridge, Conn. 06525

Filed Mar. 25, 1982, Ser. No. 361,366
Int. Cl.³ C08G 18/30
U.S. Cl. 528—75 **4 Claims**

1. A low cost resistant coating composition which comprises the reaction product of at least one polyurethane-forming reagent containing a plurality of isocyanate groups and dicyclopentenyl alcohol.

4,395,533

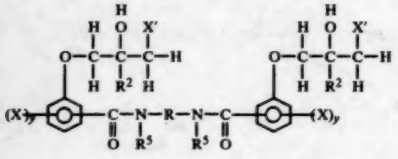
POLYURETHANES PREPARED FROM HYDROXY BENZAMIDES OR POLYOLS PREPARED FROM HYDROXY BENZAMIDES AND POLYISOCYANTES OR POLYISOTHIOCYANATES

James L. Bertram, Lake Jackson, Tex., and Edmund P. Woo, Midland, Mich., assignors to The Dow Chemical Co., Midland, Mich.

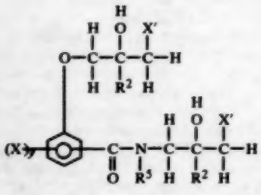
Division of Ser. No. 240,742, Mar. 5, 1981, Pat. No. 4,367,328. This application May 13, 1982, Ser. No. 377,658
Int. Cl.³ C08G 18/28
U.S. Cl. 528—77 **4 Claims**

1. A product resulting from reacting (1) a vicinal dihydroxyl-containing material or mixture of such materials represented by the following formulas VIII, IX or X

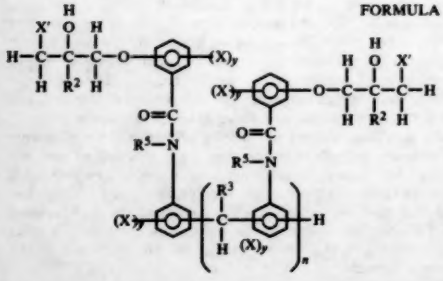
FORMULA VIII



FORMULA IX

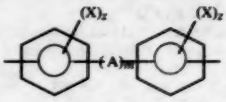


FORMULA X

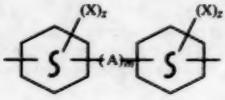


wherein each R is a divalent hydrocarbyl group having from 1 to about 18 carbon atoms, a group represented by the following formulas IV, V, VI or VII

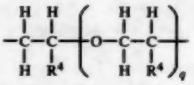
FORMULA IV



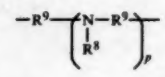
FORMULA V



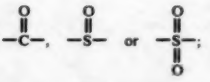
FORMULA VI



FORMULA VII

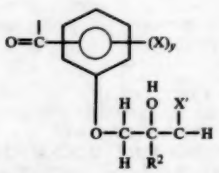


or R can be combined with R^5 so as to form a stable heterocyclic ring with the nitrogen atoms; each A is independently a divalent hydrocarbyl group having from 1 to about 10 carbon atoms, —O—, —S—, —S—S—,



each R^2 and R^3 is independently hydrogen or an alkyl group having from 1 to about 4 carbon atoms; each R^4 is independently hydrogen, a hydrocarbyl or a halogen substituted hydrocarbyl group having from 1 to about 8 carbon atoms; each R^5 is independently hydrogen, a 2-hydroxy-3-halopropyl group, a 2-alkyl-2-hydroxy-3-halopropyl group, a monovalent hydrocarbyl group or a hydroxyl substituted monovalent hydrocarbyl group, said hydrocarbyl groups having from 1 to about 9 carbon atoms, said alkyl group having from 1 to about 4 carbon atoms; each R^8 is independently selected from the group represented by the following formula XV

FORMULA XV



or the groups represented by R^5, except that R^8 cannot be hydrogen; each R^9 is a divalent hydrocarbyl group having from 2 to about 4 carbon atoms; each X is independently hydrogen, chlorine, bromine or a hydrocarbyl or hydrocarbyloxy group having from 1 to about 9 carbon atoms; each X' is a hydroxyl group; each m independently has a value of zero or 1; n has an average value of from about 0.01 to about 6; p has an average value of from 1 to about 10; q has an average value of at least 1 and each y and z independently has a value of 1 or 2 with (2) a polyisocyanate, polyisothiocyanate or mixture thereof.

4,395,534

PROCESS FOR PRODUCING AROMATIC POLYESTER CARBONATE RESIN

Senzo Shimizu, Odawara; Isao Nomura; Masahiro Harada, both of Hiratsuka; Motohachi Usui, Odawara; Susumu Taniyama, Toyonaka, and Shigeo Yanada, Osaka, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Nov. 17, 1981, Ser. No. 322,244
Int. Cl.³ C08G 63/64
U.S. Cl. 528—126 10 Claims

1. A process for producing an aromatic polyester carbonate resin in which the molar ratio of dihydric phenolic compound residue to aromatic dicarboxylic acid residue to carbonate bond is in the range of 2:0.5:1.5–2:1.4:0.6 and said constituent components form a substantially completely regular alternating configuration, said process comprising a first step wherein, in producing a hydroxyl-terminated aromatic oligocarbonate by reacting a dihydric phenolic compound with a halogenated carbonyl compound in a reaction medium consisting of water and a water-immiscible solvent in the presence of a basic inorganic compound, the reaction is carried out by using the basic inorganic compound in an amount of 0.6–1.6 moles per mole of the dihydric phenolic compound and the halogenated carbonyl compound in an amount of 0.3–0.8 mole per mole of the dihydric phenolic compound to form a reaction product mixture consisting predominantly of a phenolic hydroxyl-terminated oligocarbonate having a degree of polymerization of 1–3, and a second step in which an esterification reaction is carried out by reacting the reaction product mixture obtained in the first step with an aromatic dicarboxylic acid dichloride in the presence of a basic inorganic compound in an amount at least sufficient to neutralize the free phenolic hydroxyl groups that remain in the reaction product mixture.

4,395,535

PROCESS FOR THE MANUFACTURE OF PHENOL-ISOBUTYRALDEHYDE CONDENSATION PRODUCTS

Juergen Nieberle, Ludwigshafen; Karl-Clemens Peters, Bad Durkheim; Wolfgang Reuther, Heidelberg-Ziegelhausen, and Heinz-Hilmar Bankowsky, Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Oct. 6, 1981, Ser. No. 308,981
Int. Cl.³ C08G 8/04
U.S. Cl. 528—137 7 Claims

1. Process for the manufacture of condensation products of phenols and isobutyraldehyde wherein problems presented by odor are eliminated or substantially reduced, by reacting the phenol and isobutyraldehyde at an elevated temperature in a mole ratio of 0.5:1 to 1.5:1 in the presence of acid or compounds hydrolyzable to acids as catalysts, subsequent neutralization and removal of the resultant reaction water by a first distillation followed by subjection of the reaction products obtained in this manner to a second distillation, which second distillation is a steam distillation and the only steam distillation.

4,395,536

PREPARATION OF AROMATIC COPOLYESTERS VIA IN SITU ESTERIFICATION WITH ISOPROPENYL ESTERS OF AN ALKYL ACID

Larry F. Charbonneau, Chatham, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed Nov. 17, 1981, Ser. No. 322,147
Int. Cl.³ C08G 63/06, 63/60
U.S. Cl. 528—206 39 Claims

1. A process for preparing an aromatic polyester comprising:
(i) reacting at least one aromatic hydroxy moiety containing compound with an isopropenyl ester of an alkyl acid under esterification, reaction conditions, and
(ii) reacting the esterified compounds with at least one aromatic acid moiety containing compound in the resultant esterification reaction mixture of (i) under polyester polymerization conditions.

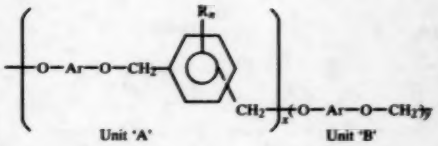
4,395,537

POLYETHER RESIN AND METHOD OF MANUFACTURING THE SAME

Kazuya Yonezawa; Masahiro Asada, both of Kobe, and Miyuki Matsuura, Nishinomiya, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Aug. 25, 1981, Ser. No. 296,209
Claims priority, application Japan, Sep. 5, 1980, 55-123659
Int. Cl.³ C08G 65/40
U.S. Cl. 528—219 9 Claims

1. A polyether comprising recurring units of the general formula:



in which Ar stands for a divalent organic group of the aromatic series, R stands for a group selected from the group consisting of CH_3, CH_3CH_2, Cl and Br, and n is an integer of 0 to 4, said polyether containing at least 1 mol % of said unit 'B'.

4,395,538

ADHESIVE FOR PRODUCTION OF METAL BOTTLES

Kazuo Taira, Tokyo; Akihiko Morofuji, Yokohama, and Hiroshi Ueno, Yokosuka, all of Japan, assignors to Toyo Seikan Kaisha, Ltd., Tokyo, Japan

Filed Sep. 10, 1982, Ser. No. 416,479
Claims priority, application Japan, Sep. 17, 1981, 56-145515
Int. Cl.³ C08G 63/02
U.S. Cl. 528—272 7 Claims

1. A metal bottle adhesive for lap-bonding upper and lower members, each consisting of a cup-like formed article of a metal, on the peripheral ends thereof, said adhesive comprising at least one high-molecular-weight thermoplastic resin having a post crystallinity ΔWc, defined by the following formula, of less than 20%:

$$\Delta Wc = Wc_{II} - Wc_I$$

wherein Wc_I stands for the crystallinity (%) of the adhesive which has been molten at a temperature higher by 30° C. than the softening point thereof and then naturally cooled at room temperature, determined according to the density method, and Wc_{II} stands for the crystallinity of the adhesive which has then been immersed in water maintained at 70° C. for 10 hours and then naturally cooled and dried at room temperature, determined acoording to the density method,
a shear creep compliance $J(t)_{t=2\ hrs}$ of less than 10^{-4} cm^2/dyne at 90° C. and a time constant of 2 hours and a concentration of

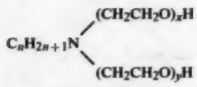
groups, contained in the main or side chain, of 10 to 1400 meq/100 g of the resin.

4,395,539
AMORPHOUS AROMATIC POLYESTER MODIFIED WITH AMINE AND UV CURABLE COMPOSITION CONTAINING THE SAME

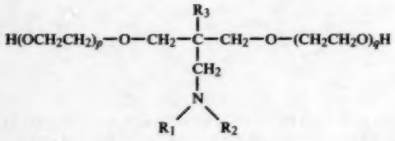
James G. Pacifici, Batesville, Ark.; Gordon C. Newland, and Howard G. Moore, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 290,460, Aug. 6, 1981, Pat. No. 4,374,716.
This application Jul. 26, 1982, Ser. No. 401,756
Int. Cl.³ C08G 69/44
U.S. Cl. 528—291 **2 Claims**

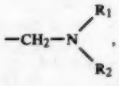
1. A novel linear amorphous aromatic polyester comprising units derived from (i) terephthalic acid, (ii) 1,2-propanediol or mixtures of 1,2-propanediol with up to 20 mole percent of ethylene glycol, based upon the total of 1,2-propanediol and ethylene glycol, and (iii) about 5 to 30 mole percent, based upon the total of (i), (ii), and (iii), of a glycol which contains a tertiary amine group, said glycol having the general formula



where n is an integer within the range of 1 to 20 and each of x and y is independently an integer within the range of 1 to 30 with the sum of x+y being less than or equal to 60, or the general formula



where each of p and q is independently 0 or a positive integer not greater than 10, and where R_1 and R_2 are lower alkyl groups and can be the same or different and R_3 is a lower alkyl group or a group of the formula



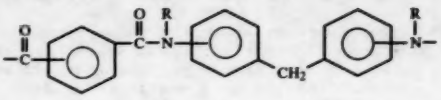
said polyester having an inherent viscosity of about 0.05 to 0.5 dl/g when measured in 60:40 phenol:tetrachlorothane at a concentration of 0.5 g/100 ml at 25° C.

4,395,540
THERMOSET-THERMOPLASTIC AROMATIC POLYAMIDE CONTAINING N-PROPARGYL GROUPS

Terry L. St. Clair, Poquoson; James F. Wolfe, Blacksburg, both of Va., and Thomas D. Greenwood, Bristol, Tenn., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Oct. 23, 1980, Ser. No. 199,768
Int. Cl.³ C08G 69/26
U.S. Cl. 528—345 **7 Claims**

1. A solvent stable thermosetting polyamide having improved heat distortion temperature characteristics and comprising repeating units of the formula:



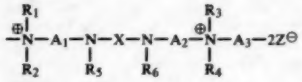
wherein R represents a mixture of $—CH_3$ and $—CH_2—C{\equiv}CH$ in varying percentages.

4,395,541
IONENE POLYMER AND PREPARATION THEREOF

Bernard Jacquet, Antony; Gérard Lang, Epinay sur Seine; Alain Malaval, Aulnay sous Bois; Serge Forestier, Claye Souilly, and Do Le Trung, Drancy, all of France, assignors to Societe Anonyme dite: L'Oreal, Paris, France

Filed Dec. 17, 1980, Ser. No. 217,402
Claims priority, application France, Dec. 21, 1979, 79 31430
Int. Cl.³ C08G 73/00
U.S. Cl. 528—367 **19 Claims**

1. A polymer having units of the formula



wherein

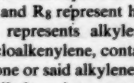
R_1, R_2, R_3 and R_4, each independently represent a hydrocarbon group containing up to 20 carbon atoms, or at least one pair selected from the group consisting of R_1, R_2 and R_3, R_4, together with the nitrogen atom to which it is attached, forms a heterocycle selected from the group consisting of a heterocycle wherein the heteroatom is nitrogen and a heterocycle containing nitrogen as a first heteroatom and a second heteroatom selected from the group consisting of oxygen and sulfur;

A_1 and A_2 each independently represents a linear or branched alkylene, or aryl, containing up to 20 carbon atoms;

X represents $—SO_2—$ or $—CO—$;

R_5 and R_6 represent hydrogen or lower alkyl when X represents $—SO_2—$;

or R_5 and R_6, together, represent

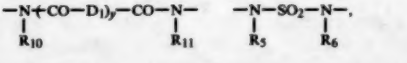


when X represents $—CO—$;

R_7 and R_8 represent hydrogen or lower alkyl;

A_3 represents alkylene, cycloalklene, alkenylene or cycloalkenylene, containing 2 to 20 carbon atoms, or at least one or said alkylene, cycloalkylene, alkenylene and cycloalkylene, interrupted by at least one heteroatom or by at least one of an arylene or cycloalkylene group, or

A_3 represents polyoxyalkylene or $—B_1—D—B_2—$ wherein B_1 and B_2 represent alkylene having from 1 to 12 carbon atoms, or arylene, and D represents a member selected from the group consisting of



$—CONH—$, $—CO—O—$, $—O—CONH—$, $—CO—D_2—CO—$ and $—O—CO—D_3—CO—O—$,

wherein

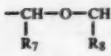
D_1 represents alkylene, alkylene interrupted by a $—S—S—$

group, alkenylene, arylene, diaminoalkylene, diaminoarylene, dioxyalkylene, polyoxyalkylene or dioxyarylene, or

D_1 represents a direct covalent bond,

y is a number equal to 0 or 1,

R_{10} and R_{11} represent hydrogen or lower alkyl, or when y is 0, R_{10} and R_{11}, together, represent



D_2 represents diaminoalkylene, dioxyalkylene, polyoxyalkylene or dithioalkylene,

D_3 represents alkylene, arylene, diaminoalkylene, diaminocycloalkylene or diaminoarylene, or

A_3, together with the two nitrogens to which it is attached and with at least one of the pairs R_1, R_3 and R_2, R_4, represents a cyclic or polycyclic group having from 4 to 6 carbon atoms; and

$Z^{\ominus}$ represents an anion.

4,395,542

PROCESS FOR REMOVING TRACE AMOUNTS OF EPICHLOROHYDRIN FROM HEAT SENSITIVE GLYCIDYL PRODUCTS

Yel S. Sury, Warwick, R.I., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jan. 19, 1982, Ser. No. 340,674

Int. Cl.³ C08G 59/00, 59/02

U.S. Cl. 528—481 **10 Claims**

1. A method of preparing an epoxy resin or product containing glycidyl groups, essentially free of residual epichlorohydrin and associated volatile material, which comprises

heating an epoxy resin or product containing glycidyl groups, which still contains excessive amounts of residual epichlorohydrin and associated volatile materials, to a temperature of 60° to 250° C., a temperature sufficient to allow said resin or said product to flow easily, but insufficient to cause thermal decomposition thereof, and

passing the heated resin or product one or more times through a packed column or multistage evaporation stripper, to effect multistage stripping of said resin or product, at a temperature of 60° to 250° C. and at a pressure of 1 to 500 mm Hg, to reduce the level of epichlorohydrin and associated volatile materials in the heated resin or product to less than 10 ppm.

4,395,543

SELECTIVE SOLVENT EXTRACTION OF CELLULOSIC MATERIAL

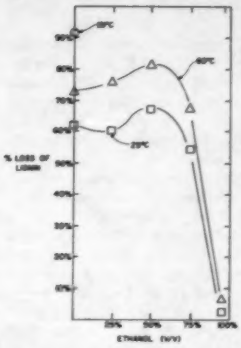
Daniel I. C. Wang, Belmont, and George C. Avgerinos, Newton Center, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Aug. 12, 1981, Ser. No. 292,314

Int. Cl.³ C08B 1/00

U.S. Cl. 536—56 **10 Claims**

1. The process for selectively extracting lignin from a cellulosic material containing cellulose, hemicellulose and lignin in order to obtain a cellulose composition wherein the weight ratio of pentosan to lignin is at least about 5:1 and the weight ratio of cellulose and hemicellulose to lignin is at least about 10:1 and greater than 90% of the initial cellulose and pentosan is retained, which comprises contacting said material with a solvent composition comprising water, between about 40 and about 75 volume % ethanol and a base, said solvent composition having a pH between about 11 and about 14, said extraction being conducted at a temperature between about 15° C.



and about 70° C. for a period of time of between about 2 and about 80 hours.

4,395,544

4-HALO-5-FORMYL THIAZOLES

Robert Egli, Rheinfelden, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

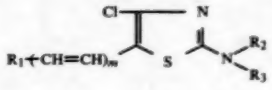
Continuation-in-part of Ser. No. 144,383, Apr. 28, 1980, abandoned. This application May 15, 1981, Ser. No. 264,019

Claims priority, application Switzerland, May 3, 1979, 4142/79

Int. Cl.³ C07D 277/28

U.S. Cl. 542—413 **29 Claims**

1. A compound of the formula,



in which

R_1 is -CHO, -CH=CR$_4$R$_5$, -CN, -CH=NOH, -CH$_2$OR$_6$, -CH=N-NHR$_7$,

or -CH(OH)CN,

R_2 is hydrogen; C_{1-10}alkyl; c_{2-3}alkyl substituted by hydroxy, cyano, chlorine, bromine, alkyl-C_{1-3}carbonyl, alkoxy-C_{1-4}carbonyloxy, alkylC_{1-4}carbonyloxy, alkylaminocarbonyloxy, dialkylaminocarbonyloxy, alkoxyC_{1-4}carbonyl, phenylaminocarbonyloxy or N-alkyl-N-phenylaminocarbonyloxy with the proviso that such substituted alkyl radicals are free from acetal groups; phenyl optionally substituted by 1 or 2 substituents selected from chlorine, bromine, methyl and nitro; alkenyl; dicyanoalkenyl; cyclohexyl; or naphthyl,

and R_3 has one of the significances of R_2 with the proviso that when one of R_2 and R_3 is naphthyl the other has a significance other than naphthyl or phenyl, and when one of R_2 and R_3 is dicyanoalkenyl the other is hydrogen,

or, R_2 and R_3 together with the nitrogen atom form a piperidine, piperazine or morpholine ring,

or R_2 and R_3 together form a group of formula

$=CH-(CH=CH)_{m'}-NR_{10}R_{11}$

in which either,

R_{10} is hydrogen or alkyl, and

R_{11} is hydrogen, alkyl or phenyl,

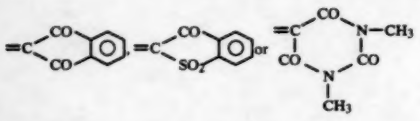
or, R_{10} and R_{11} together with the N-atom form piperidine,

with the proviso that R_2 and R_3 are both hydrogen when R_1 is other than —CHO or $-CH=CR_4R_5$ and at least one of R_2 and R_3 is other than hydrogen when R_1 is $-CH=CR_4R_5$,

either R_4 is hydrogen, cyano, alkylcarbonyl benzoyl, alkylsulphonyl, phenylsulphonyl, alkylaminocarbonyl, dialkylaminocarbonyl, phenylaminocarbonyl, N-alkyl-N-phenylaminocarbonyl, aminocarbonyl, aminocarbonylaminocarbonyl, piperidinylcarbonyl, aminothiocarbonyl, benzimidazolyl-2 or -COOB, in which B is hydrogen; C_{1-10}alkyl; C_{5-7}cycloalkyl; C_{1-6}alkyl substituted by up to three substituents selected from the group consisting of chlorine and bromine; C_{1-6}alkyl substituted by up to two substituents selected from the group consisting of chlorine, bromine, hydroxyl, cyano, phenoxy, alkoxy, carboxy, alkoxycarbonyloxy, alkylcarbonyloxy, alkoxycarbonyloxy, alkylaminocarbonyloxy, aminocarbonyl, alkylaminocarbonyl, phenylaminocarbonyl, benzyloxycarbonyl, and phenyl, in which the phenyl ring is optionally substituted by 1 or 2 substituents selected from chlorine, bromine and nitro, with the proviso that when such alkyl is substituted by a group containing a benzene ring it is monosubstituted and any substituted alkyl is free from acetal groups or B is C_{3-6}alkenyl optionally substituted by chlorine or bromine; or is alkynyl,

and R_5 is hydrogen, cyano, alkoxycarbonyl, nitro or 3-dicyanomethylene-5-5-dimethylcyclohene-1-yl with the proviso that when R_5 is the latter R_4 is hydrogen and when R_5 is nitro R_4 is hydrogen, methyl or ethyl,

or R_4 and R_5 together form a ring system of the formula



R_6 is hydrogen, alkyl, alkylcarbonyl or benzyl in which the benzene ring is optionally substituted by up to two substituents selected from chlorine, bromine and nitro,

R_7 is hydrogen, alkyl, aminocarbonyl, amino thiocarbonyl or phenyl which is optionally substituted by 1 or 2 substituents selected from the group consisting of chlorine, bromine and nitro,

R_8 is hydrogen, chlorine, bromine, methyl, C_{1-2}alkoxy, carboxyl, alkoxycarbonyl, cyano or nitro,

m is 0 or 1,

m′ is 0 or 1,

and any alkyl and alkoxy groups or moieties in such compounds contain 1 to 4 carbon atoms and any alkenyl or alkynyl groups or moieties 3 to 4 carbon atoms, except when otherwise stated.

4,395,545

BASIC DIOXAZINE COMPOUNDS

Jean-Marie Adam, 3, Rue de Montreux, 68300 Saint-Louis, and Pierre Galafassi, 12, Rue des Sapins, 68170 Rixheim, both of France

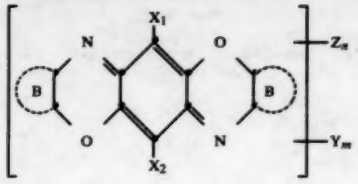
Continuation of Ser. No. 115,641, Jan. 28, 1980, abandoned. This application Aug. 14, 1981, Ser. No. 292,970

Claims priority, application Switzerland, Feb. 2, 1979, 1042/79

Int. Cl.³ C07D 498/22

U.S. Cl. 544—74 **10 Claims**

1. A dioxazine compound of the formula I



(I)

wherein

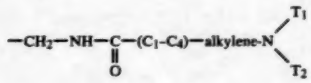
each of X_1 and X_2 is chlorine;

each B independently is a fused ring system selected from the group consisting of naphthalene, fluorene, diphenylene oxide, diphenylene sulfide, disphenylene dioxide, phenanthrene, anthracene, fluorenone, xanthone, thioxanthone, pyrene, chrysene, carbazole and anthraquinone, each of which, in addition to the substituents Z and Y, can be further substituted by 1 or more unbranched or branched alkyl of 1–4 carbons or acyl selected from the group consisting of CO—C_1–C_4 alkyl, CO-phenyl, SO_2—C_1–C_4 alkyl and SO_2-phenyl;

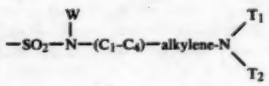
Y is a phosphoric acid group, carboxylic acid group or sulfonic acid group, or a salt thereof;

Z is

(1) a non-quaternised basic group selected from the group consisting of



and



wherein

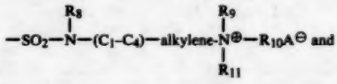
T_1 is hydrogen, low molecular alkyl which is unsubstituted or substituted by hydroxyl, cyclohexyl which is unsubstituted or substituted by 1–3 methyl groups or phenyl,

T_2 is low molecular alkyl which is unsubstituted or substituted by hydroxyl, or T_1 or T_2 together with the nitrogen atom to which they are attached form a pyrrolidine, piperidine, morpholine or piperazine ring,

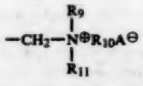
W is hydrogen or alkyl or 1 to 4 carbons which is unsubstituted or substituted by hydroxyl or C_1–C_4 alkoxy; or

(2) a quaternised basic group selected from the group consisting of

$-CH_2NH-CO-(C_1-C_4)-$alkylene-$K^{\oplus}A^{\ominus}$,

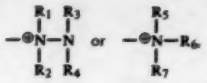


and



wherein

$K^{\oplus}$ is



each of R_1 and R_2 independently is an alkyl group of 1 to 4 carbons, cycloalkyl or together with the nitrogen atom to which they are attached form a heterocyclic ring selected from the group of pyridine and triethylenediamine, each of R_3 and R_4 independently is hydrogen, an alkyl group of 1 to 4 carbons, cycloalkyl or an acyl group of the formula CO—C_1–C_4 alkyl, CO-phenyl, SO_2—C_1–C_4 alkyl or SO_2-phenyl, R_5 is (1) hydrogen, (2) an alkyl group of 1 to 4 carbons which is unsubstituted or substituted by OH or NH_2, (3) cycloalkyl or (4) phenyl, each of R_6 and R_7 independently is hydrogen, an alkyl group of 1 to 4 carbons, cycloalkyl, an alkoxy group of 1 to 4 carbons or phenyl, or together with the nitrogen atom to which they are attached, R_1 and R_3, R_2 and R_4, R_5 and R_6 or R_5, R_6 and R_7, form a heterocyclic ring selected from the group of pyridine and triethylenediamine, R_8 is hydrogen or an alkyl group of 1 to 4 carbons, each of R_9 and R_{10} independently is an alkyl group of 1 to 4 carbons or cycloalkyl, and R_{11} is an alkyl group of 1 to 4 carbons, cycloalkyl, an alkoxy group of 1 to 4 carbons or NH_2, or 2 or 3 members selected from R_9, R_{10} and R_{11} together with the nitrogen atom to which they are attached form a heterocyclic ring selected from the group of pyridine and triethylenediamine;

$A^{\ominus}$ is an anion;

m is 0 to 2; and

n is 1 to 4 with the proviso that m is not greater than n.

4,395,546

N-METHYLOLCARBOXAMIDE COMPOUNDS

Jeroslav Haase, Basel; Peter Liechti, Arisdorf; Hans Wegmüller, Riehen; Rudolf F. Wurster, Pfeffingen, and Quentin Bowes, Rheinfelden, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

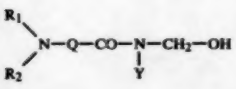
Division of Ser. No. 11,579, Feb. 9, 1979, Pat. No. 4,306,080, which is a continuation of Ser. No. 941,823, Sep. 11, 1978, abandoned, which is a continuation of Ser. No. 740,586, Nov. 10, 1976, abandoned. This application Aug. 31, 1981, Ser. No. 298,214

Claims priority, application Switzerland, Nov. 14, 1975, 14798/75

Int. Cl.³ C07D *295/14*

U.S. Cl. 544—168 **5 Claims**

1. A basic methylolamide compound of the formula



or a salt thereof,

in which

R_1 and R_2, together with the nitrogen atom which links them, denote a pyrrolidinyl, piperidino, morpholino or piperazinyl radical,

Q denotes an alkylene- or alkyl-substituted alkylene chain with 2 to 8 carbon atoms and Y denotes hydrogen, lower alkyl or —CH_2OH.

4,395,547

PROCESS FOR PREPARING 1-SUBSTITUTED-6-N-PROPYL-8-METHYLIMIDAZO[1,5-d]-AS-TRIAZIN-4(3H)-ONES

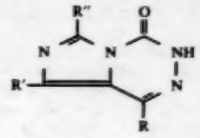
Sivaraman Raghu, Norwalk, Conn.; James S. Farina, Champlain, N.Y., and Steven L. Peake, New Canaan, Conn., assignors to American Cyanamid Co., Stamford, Conn.

Filed Feb. 10, 1982, Ser. No. 347,653

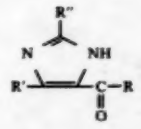
Int. Cl.³ C07D *487/04*

U.S. Cl. 544—184 **1 Claim**

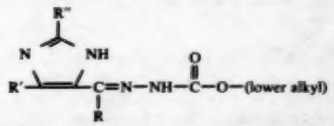
1. The process of preparing compounds of the formula:



wherein R is methyl, ethyl or n-propyl, R′ is methyl, ethyl or phenyl, R″ is alkyl, aromatic or heterocyclic which comprises condensing a ketone of the formula:



wherein R, R′ and R″ are as hereinabove defined with a lower alkyl carbazate ester in an inert solvent at 80°–135° for several hours whereby a lower alkyl 3-[1-(2-n-propyl-4-methyl-5-imidazolyl)alkylidene]carbazate of the formula:



is obtained; and cyclizing the so obtained imidazolylalkylidene carbazate ester in diphenyl ether at 150°–250° C. for 15–45 minutes.

4,395,548

PROCESS FOR PRODUCTION OF AN ALKALI METAL DICHLOROISOCYANURATE AND TRICHLOROISOCYANURIC ACID

John F. Start, Trenton, N.J., assignor to FMC Corporation, Philadelphia, Pa.

Filed Apr. 2, 1982, Ser. No. 365,060

Int. Cl.³ C07D *251/36*

U.S. Cl. 544—190 **15 Claims**

1. A process for producing both an alkali metal dichloroisocyanurate and trichloroisocyanuric acid by a two-stage chlorination comprising:

(a) chlorinating an aqueous solution of a trialkali metal salt of cyanuric acid maintained at a temperature between 10° C. and 30° C. and at a pH between 5 and 9 thereby forming a slurry of alkali metal dichloroisocyanurate,

(b) separating the undissolved alkali metal dichloroisocyanurate from the aqueous medium constituting the mother liquor,

(c) whenever the mol ratio in the mother liquor of available alkalinity to chlorine required to convert any triazine compounds which are present to trichloroisocyanuric acid falls outside the range of 1.0 to 1.3, adding sufficient

alkali metal salt of carbonic acid to the mother liquor to bring the mol ratio within the said range,

(d) chlorinating the mother liquor from step (c) while maintaining the temperature between 10° C. and 30° C. and the pH between 2.5 and 3.5, and

(e) recovering the resulting trichloroisocyanuric acid so produced.

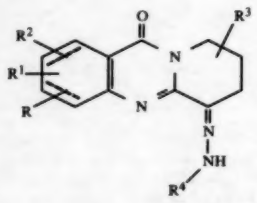
4,395,549

6-HYDRAZONO-PYRIDO[2,1-b] QUINAZOLINE-11 ONES

Istvan Hermecz, Budapest; Jozsef Kökosi, Budaörs; Agnes Horvath, Budapest; Zoltan Meszaros, Budapest; György Szasz, Budapest; Tibor Breining, Budapest, and Lelle Vasvari nee Debreczy, Budapest, all of Hungary, assignors to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara Rt., Budapest, Hungary

Filed Oct. 2, 1981, Ser. No. 308,038
Int. Cl.³ C07D *487/04, 487/14*
U.S. Cl. 544—252 **9 Claims**

1. A compound of the formula



(I)

or a pharmaceutically acceptable acid addition or quaternary ammonium salt thereof

wherein

R, R^1 and R^2 are the same or different and stand for hydrogen, halogen, nitro, carboxy, nitrile, alkoxy containing 1 to 4 carbon atoms, alkyl containing 1 to 4 carbon atoms, amino or hydroxy, or R and R^1 together stand for methylenedioxy and R^2 stands for hydrogen;

R^3 stands for hydrogen or alkyl containing 1 to 4 carbon atoms;

R^4 stands for phenyl, phenyl substituted by 1 to 3 of the same or different substituents selected from the group consisting of halogen, alkyl having 1 to 4 carbon atoms, alkoxy having 1 to 4 carbon atoms, phenyloxy, hydroxy, nitro, amino, cyano, carboxy, alkoxycarbonyl having 1 to 4 carbon atoms, alkanoyl having 1 to 4 carbon atoms, methylenedioxy, trifluoromethyl, phenyl and dialkylamino having 1 to 4 carbon atoms in the alkyl group, or R^4 is naphthyl, and the dotted line indicates an optional double bond.

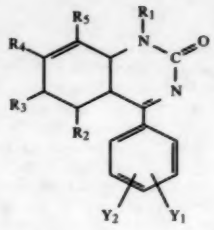
4,395,550

TETRAHYDRO-2(1H)-QUINAZOLINONES AND CYCLOHEXENE NITRILES

Peter Fünfschilling, Basel, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

Continuation of Ser. No. 164,048, Jun. 30, 1980, abandoned. This application Nov. 5, 1981, Ser. No. 318,480
Claims priority, application Switzerland, Jul. 5, 1979, 6298/79
Int. Cl.³ C07D *239/82, 239/96*; C07C *125/065*
U.S. Cl. 544—253 **9 Claims**

1. A compound of the formula:



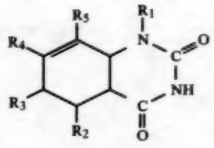
wherein

R_1 is C_1–C_5-alkyl, C_3–C_6-cycloalkyl, C_3–C_6-cycloalkyl-(C_1–C_4)-alkyl, C_1–C_5-haloalkyl, allyl or propargyl,

R_2, R_3, R_4 and R_5 are independently of each other hydrogen, fluorine, chlorine, bromine, C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-alkylthio, nitro or trifluoromethyl, whereby at least two of R_2, R_3, R_4 and R_5 are hydrogen, and

Y_1 and Y_2 are independently of each other hydrogen, fluorine, chlorine, bromine, C_1–C_4-alkyl, C_1–C_4-alkoxy or trifluoromethyl.

4. A compound of the formula:

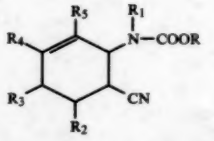


wherein

R_1 is C_1–C_5-alkyl, C_3–C_6-cycloalkyl, C_3–C_6-cycloalkyl-(C_1–C_4)-alkyl, C_1–C_5-haloalkyl, allyl or propargyl, and

R_2, R_3, R_4 and R_5 are independently of each other hydrogen, fluorine, chlorine, bromine, C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-alkylthio, nitro or trifluoromethyl, whereby at least two of R_2, R_3, R_4 and R_5 are hydrogen.

7. A compound of the formula:



wherein

R is C_1–C_4-alkyl,

R_1 is C_1–C_5-alkyl, C_3–C_6-cycloalkyl, C_3–C_6-cycloalkyl-(C_1–C_4)-alkyl, C_1–C_5-haloalkyl, allyl or propargyl, and

R_2, R_3, R_4 and R_5 are independently of each other hydrogen, fluorine, chlorine, bromine, C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-alkylthio, nitro or trifluoromethyl, whereby at least two of R_2,

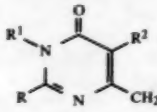
R_3, R_4 and R_5 are hydrogen.

4,395,551
PYRIDOPYRIMIDINONE COMPOUNDS

Mark A. Dekeyser, Waterloo; Benjamin J. Pierce, Guelph, both of Canada; Richard C. Moore, Wallingford, and Winchester L. Hubbard, Woodbridge, both of Conn., assignors to Uniroyal, Inc., New York, N.Y.

Filed Dec. 10, 1981, Ser. No. 329,157
Int. Cl.³ C07D 487/04, 513/04; C07F 9/65; A01N 57/16
U.S. Cl. 544—282 2 Claims

1. A compound of the formula



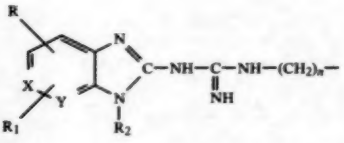
wherein R and R^1 together form a 1,3-butadien-1,4-diyl group optionally substituted with a methyl or chloro group and R^2 is halogen.

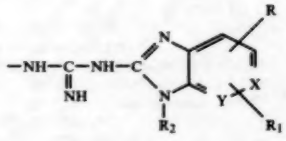
4,395,552
ANTIMICROBIAL BIS-IMIDAZOLO-PYRIDINE COMPOUND

Bola V. Shetty, Stamford, Conn., and John E. Airey, Mt. Kisco, N.Y., assignors to The Purdue Frederick Company, Norwalk, Conn.

Division of Ser. No. 92,279, Nov. 8, 1979, Pat. No. 4,281,138. This application Nov. 3, 1980, Ser. No. 203,480
Int. Cl.³ C07D 471/04
U.S. Cl. 546—118 2 Claims

1. A compound of the formula:





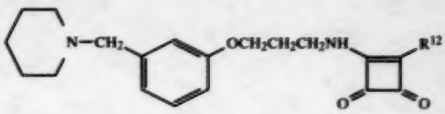
wherein R and R_1=H, lower alkyl, halogen, methoxy, hydroxy, nitro, carboxy, phenyl, phenyl substituted by lower alkyl or sufamyl, where R_2=H, lower alkyl, phenyl or phenyl substituted by lower alkyl, where n is an integer from 2–20, and where x=carbon when y=nitrogen and x=nitrogen when y=carbon.

4,395,553
CHEMICAL COMPOUNDS

Aldo A. Algieri, Fayetteville, and Ronnie R. Crenshaw, Dewitt, both of N.Y., assignors to Bristol-Myers Company, New York, N.Y.

Division of Ser. No. 264,533, May 18, 1981. This application Feb. 8, 1982, Ser. No. 346,455
Int. Cl.³ C07D 295/12
U.S. Cl. 546—235 2 Claims

1. A compound of the formula



wherein R^{12} is a conventional leaving group selected from halogen, phenoxy, substituted phenoxy and (lower)alkoxy.

4,395,554
PROCESS FOR PRODUCING ALPHA-PICOLINE

Clarence D. Chang, Princeton, and Patrick D. Perkins, Titusville, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 326,258, Dec. 1, 1981, abandoned. This application Apr. 16, 1982, Ser. No. 369,296
Int. Cl.³ C07D 213/16
U.S. Cl. 546—250 13 Claims

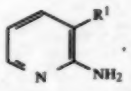
1. A method of making alpha-picoline or a substituted alpha picoline by contacting aniline or a substituted aniline with a crystalline zeolite catalyst.

4,395,555
PREPARATION OF 2-AMINOPYRIDINE DERIVATIVES

Rolf-Dieter Acker, Leimen, and Gerhard Hamprecht, Weinheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

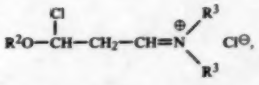
Filed Jan. 8, 1982, Ser. No. 338,112
Claims priority, application Fed. Rep. of Germany, Jan. 30, 1981, 3103065
Int. Cl.³ C07D 213/55, 213/57
U.S. Cl. 546—289 10 Claims

1. A process for the preparation of 2-aminopyridine derivatives of the formula



I

where R^1 is cyano or carboxyl, wherein a quaternary ammonium compound of the formula



II

where the individual radicals R^2 and R^3 can be identical or different and each is an alkyl radical having 1–7 carbon atoms,

(a) is reacted with malodinitrile in the presence of an alkanol,

(b) the resulting reaction mixture is then reacted with ammonia in the presence of an alkanol, water and/or an ether and, if desired,

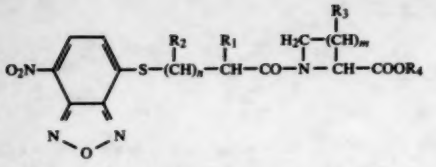
(c) the aminonicotinonitrile thus obtained is reacted with an alkali metal compound.

4,395,556
NITROBENZOFURAN DERIVATIVES

Callixtus E. Ita, South River, N.J.; Anthony F. Heald, Glen Mills, Pa., and Peter Egli, Titusville, N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Feb. 4, 1982, Ser. No. 345,883
Int. Cl.³ C07D 271/12
U.S. Cl. 548—126 4 Claims

1. A compound having the formula



or a salt thereof, wherein R_1 and R_2 each is hydrogen, lower alkyl or phenyl-lower alkyl; R_3 is hydrogen, hydroxy or lower alkyl; R_4 is hydrogen or lower alkyl; m is 2 or 3; and n is 0, 1 or 2.

4,395,557

PHOSPHORUS-CONTAINING IMIDE RESINS

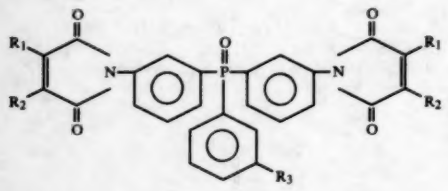
Indra K. Varma, New Delhi, India; George M. Fohlen, Millbrae, and John A. Parker, Los Altos, both of Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Continuation-in-part of Ser. No. 175,452, Aug. 5, 1980, Pat. No. 4,276,344. This application Jul. 30, 1981, Ser. No. 288,267

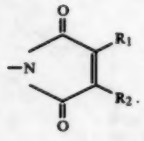
Int. Cl.³ C07D *207/26, 209/34*

U.S. Cl. 548—413 8 Claims

1. Imides having the structure



wherein R_1 and R_2 are selected from the class consisting of chloro, lower alkyls and hydrogen and R_3 is the amino group or an imide group



4,395,558

9-EPI-MITOMYCIN B AND D COMPOUNDS

Masaji Kasai, Rockville, Md.; Kunikatsu Shirahata, and Motomichi Kono, both of Machida, Japan, assignors to Kyowa Hakko Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 180,553, Aug. 22, 1980, abandoned. This application Nov. 23, 1981, Ser. No. 323,847

Claims priority, application Japan, Aug. 24, 1979, 54-107069

Int. Cl.³ A61K *31/40*; C07D *487/04*

U.S. Cl. 548—422 4 Claims

1. 9-epi mitomycin B.

3. 9-epi mitomycin D.

4,395,559

2,3-INDOLEDIONE DERIVATIVES

Graham A. Fothergill, Knebworth, and John M. Osbond, Hatfield, both of England, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

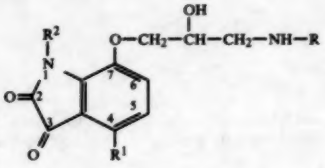
Filed Dec. 1, 1980, Ser. No. 211,883

Claims priority, application United Kingdom, Dec. 12, 1979, 7942324

Int. Cl.³ A61K *31/40*; C07D *209/38*

U.S. Cl. 548—485 7 Claims

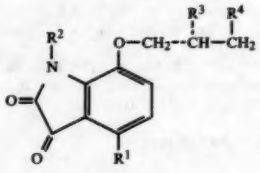
1. A compound of the formula



I

wherein R is isopropyl or tert.butyl, R^1 is hydrogen or lower alkyl, and R^2 is lower alkly, benzyl or β-phenethyl, or a pharmaceutically acceptable acid addition salt thereof.

7. A compound of the formula



II

wherein R^1 is hydrogen or lower alkyl, R^2 is lower alkyl, benzyl or β-phenethyl, R^3 is hydroxy, and R^4 is chlorine or bromine, or R^3 and R^4, taken together, are oxygen.

4,395,560

PREPARATION OF 6a,10a-TRANS-HEXAHYDRODIBENZOPYRANONES

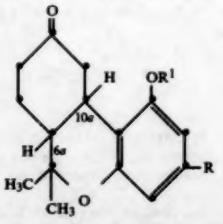
Charles W. Ryan, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed May 24, 1982, Ser. No. 381,111

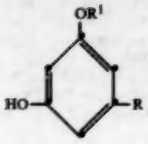
Int. Cl.³ C07D *311/78*

U.S. Cl. 549—391 15 Claims

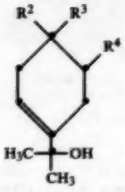
1. A process for preparing a 6a,10a-trans compound of the formula



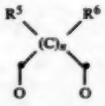
wherein R is C_5–C_{10} alkyl, C_5–C_{10} alkenyl, C_5–C_8 cycloalkyl or C_5–C_{10} cycloalkenyl, and R^1 is methyl or ethyl; comprising reacting a 5-substituted resorcinol of the formula



with a cyclohexene carbinol compound of the formula



wherein R^2 is C_1–C_4 alkoxy and R^3 and R^4 together are a double bond, or R^4 is hydrogen and R^2 and R^3 together are oxo or a group of the formula



in which R^5 and R^6 independently are hydrogen, methyl or ethyl, and n is 0 or 1; in the presence of a catalyst selected from boron trifluoride, boron tribromide or stannic chloride.

4,395,561

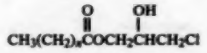
SYNTHESIS OF 3-HYDROXYOXETANE

Kurt Baum, Pasadena; Vytautas Grakauskas, Arcadia, both of Calif., and Phillip T. Berkowitz, Woodbridge, Conn., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 14, 1982, Ser. No. 378,167
Int. Cl.³ C07D 305/08
U.S. Cl. 549—510 **15 Claims**

1. A process for preparing 3-hydroxyoxetane comprising the following steps in order:

(1) reacting a carboxylic acid of the formula $CH_3(CH_2)_nCOOH$ with epichlorohydrin in the presence of a catalytic amount of anhydrous ferric chloride to produce an ester of the formula



wherein n is an integer of from 0 to 3;

(2) reacting the ester formed in step (1) with a blocking agent selected from the group consisting of

(a) dihydropyran,

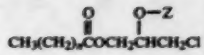
(b) ethyl vinyl ether,

(c) propyl vinyl ether,

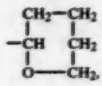
(d) n-butyl vinyl ether, and

(e) isopentyl vinyl ether

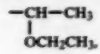
in the presence of a catalyst selected from the group consisting of pyridinium p-toluenesulfonate and toluenesulfonic acid to form a blocked ester of the formula



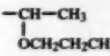
wherein n is an integer of from 0 to 3 and Z is selected from the group consisting of



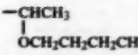
(a)



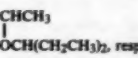
(b)



(c)



(d)



(e)

(3) hydrolyzing the blocked ester formed in step (2) with an aqueous base to remove the carboxylic acid and form a 3-hydroxyoxetane derivative of the formula

wherein Z is defined in step (2);

(4) removing the blocking group from the 3-hydroxyoxetane derivative by heating it with an alcohol and an acid to form the produce 3-hydroxyoxetane,

(5) isolating the product 3-hydroxyoxetane.

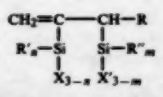
4,395,562

VINYLIDENE-SILICON-COMPOUND AND A PROCESS FOR ITS PRODUCTION

Terui Yohji, Chibashi; Koga Isao, Sakurashi, and Ohtake Nobumasa, Yokohamashi, all of Japan, assignors to Chisso Corporation, Osaka, Japan

Filed Apr. 7, 1982, Ser. No. 366,421
Claims priority, application Japan, Apr. 15, 1981, 56-56507
Int. Cl.³ C07F 7/08, 7/18
U.S. Cl. 556—431 **4 Claims**

1. A vinylidene silicone compound represented by the general formula



where R is an alkyl group of 1 to 7 carbon atoms or a hydrogen atom; each of R′ and R″ is an alkyl of 1 to 7 carbon atoms; each

of X and X' is a chlorine atom or an alkoxy group of 1 to 4 carbon atoms; and each of n and m is an integer of 0 to 3.

4,395,563

HYDROLYSIS OF ALKOXYSILANES

Susan E. Hayes, Schenectady, N.Y., assignor to General Electric Company, Waterford, N.Y.

Filed Oct. 29, 1981, Ser. No. 316,241
Int. Cl.³ C07F 7/08, 7/18
U.S. Cl. 556—459 **81 Claims**

1. A process for hydrolyzing alkoxysilanes comprising:

(a) mixing an alkoxysilane having the general formula:

$$(R'O)_aSi\ R_{4-a}$$

wherein R is selected from the group consisting of alkyl, cycloalkyl, aryl, arylalkyl, haloalkyl, alkaryl, alkenyl, hydrogen and mixtures thereof; R' is alkyl; and a is an integer from 1 to 4; a stoichiometric excess of water and an effective catalytic amount of solid hydrolysis catalyst selected from the group consisting of a solid oxide of a Group IIa metal and solid acid catalyst to form a hydrolysis mixture of hydrolyzed product, reaction byproducts, hydrolysis catalyst and unreacted water;

(b) separating volatile by-products and unreacted reagents from the hydrolyzed product in the presence of the solid hydrolysis catalyst to form a devolatilized hydrolysis mixture, said separation being one which reduces the alkoxy content of the alkoxysilane;

(c) neutralizing the devolatilized hydrolysis mixture with a sufficient amount of neutralizing agent when the catalyst is a solid acid catalyst and optionally adding a suitable amount of condensation catalyst to increase the molecular weight of the hydrolysis product; and

(d) separating the hydrolysis catalyst from the product.

4,395,564

PROCESS FOR THE PREPARATION OF ALKOXYHYDRIDOSILANES

Bernard Kanner, West Nyack, and Steven P. Hopper, Mahopac, both of N.Y., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Jul. 13, 1982, Ser. No. 397,815
Int. Cl.³ C07F 7/08, 7/10, 7/18
U.S. Cl. 556—470 **14 Claims**

1. A process for the preparation of alkoxyhydridosilanes which comprises reacting a silane of the general formula

$$HSi(NRR')_x(R'')_{3-x}$$

wherein R, R' and R'' are independently an aliphatic or aromatic, substituted or unsubstituted, saturated or unsaturated hydrocarbon radicals having from one to eight carbon atoms inclusive and where R and R' may also be hydrogen and where R'' may also be alkoxy and where x has a value of from one to three with alcohols of the general formula

$$R'''OH$$

where R''' is an aliphatic or aromatic, saturated or unsaturated, substituted or unsubstituted hydrocarbon radical having from one to twenty carbon atoms inclusive in the presence of a catalyst at a temperature between −50° C. to 150° C. where approximately one equivalent of alcohol is employed per mole of the silicon-nitrogen bond and where the catalyst concentration is equal to about 0.01 to 10 mole percent of the silicon-nitrogen bonds.

4,395,565

PREPARING AROMATIC URETHANS

Ugo Romano, Vimercate; Giancarlo Fornasari, Milan, and Sandro Di Gioacchino, Rome, all of Italy, assignors to Anic S.p.A., Palermo, Italy

Filed Jan. 15, 1982, Ser. No. 339,465
Claims priority, application Italy, Jan. 28, 1981, 19368 A/81
Int. Cl.³ C07C 125/065
U.S. Cl. 560—24 **9 Claims**

1. A process for the preparation of aromatic urethans comprising the step of reacting, at a temperature between about 50° C. and about 150° C., an aromatic amine with an alkyl carbonate in the presence of a catalyst selected from among the alcholates of alkali metals or alkaline earth metals.

4,395,566

SOLVENT-FREE ESTERIFICATION OF CARBOXYAROMATICS

James H. Covill, Pineville, N.C.; Michael G. Kelly, Coventry, and Thomas F. Leahy, E. Greenwich, both of R.I., assignors to American Hoechst Corporation, Somerville, N.J.

Filed Mar. 8, 1982, Ser. No. 355,812
Int. Cl.³ C07C 67/08
U.S. Cl. 560—87 **9 Claims**

7. A process comprising intimately mixing pyromellitic dianhydride, a fluorinated alcohol consisting of a mixture of 2-(n-perfluoroalkyl) ethanols having six to twelve carbon atoms in the perfluoroalkyl groups, and epichlorohydrin, and heating said mixtures to form the tetraester of said pyromellitic dianhydride.

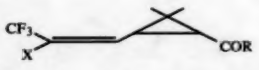
4,395,567

1R,CIS-3-(2-HALO-3,3,3-TRIFLUORO-1-PROPENYL)-2,2-DIMETHYLCYCLOPROPANECARBOXYLIC ACID DERIVATIVES

John F. Engel, Washington Crossing, Pa., assignor to FMC Corporation, Philadelphia, Pa.

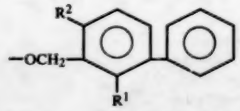
Continuation-in-part of Ser. No. 221,656, Dec. 31, 1980, Pat. No. 4,333,950. This application Dec. 7, 1981, Ser. No. 327,839
The portion of the term of this patent subsequent to Dec. 9, 1997, has been disclaimed.
Int. Cl.³ C07C 69/743
U.S. Cl. 560—124 **3 Claims**

1. A 1R,cis-trifluoromethylethenylcyclopropanecarbonyl compound of the formula



I

in which X is halogen, R is an alcohol residue of the formula



II

in which R^1 and R^2 are independently hydrogen, lower alkyl or halogen.

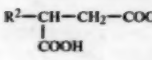
4,395,568

ANIONIC SURFACE ACTIVE AGENTS

Attila Molnar; György Csermely, and György Lanyi, all of Budapest, Hungary, assignors to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara Rt., Budapest, Hungary

Filed Oct. 21, 1980, Ser. No. 199,315
Claims priority, application Hungary, Oct. 26, 1979, CI 1980
Int. Cl.³ C07C *69/34, 69/52*
U.S. Cl. 560—198 2 Claims

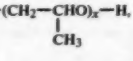
1. Anionic surface active agents of the formula



where

R^2 is C_{8-12} alkyl or alkenyl; and

Z is $-(CH_2-CH_2-O)_x-H$ or



wherein x is an integer of 3 to 35 and the salts with inorganic and organic bases.

4,395,569

METHOD OF PREPARING SULFONIC ACID SALTS OF ACYLOXYALKYLAMINES AND POLYMERS AND COMPOUNDS THEREFROM

Sheldon N. Lewis, Willow Grove, and Jerome F. Levy, Dresher, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 821,068, May 1, 1969, Pat. No. 4,194,052, which is a continuation-in-part of Ser. No. 740,480, Jun. 27, 1968, Pat. No. 4,176,232. This application Dec. 17, 1979, Ser. No. 104,256
The portion of the term of this patent subsequent to Mar. 18, 1997, has been disclaimed.
Int. Cl.³ C07C *67/08, 101/00*
U.S. Cl. 560—222 2 Claims

1. Process for the production of an ester of an organic acid which comprises reacting:

(a) at least one alkanolamine sulfonic acid salt said alkanolamine having from two to eight carbon atoms, one primary amino group and either a primary or secondary hydroxyl group, with

(b) at least one organic acid or salt thereof selected from the group consisting of:

(1) aliphatic and aromatic dicarboxylic acids and

(2) acrylic, methacrylic, fumaric, maleic and

(3) a sulfonic acid salt of an amino acid selected from the group consisting of monoamino-monocarboxylic, monoamino-dicarboxylic, diamino-monocarboxylic, and diamino-dicarboxylic acids,

at a temperature of at least 40° C. while removing water as the reaction proceeds.

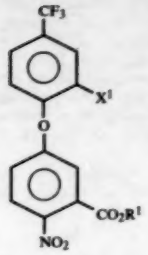
4,395,570

PREPARATION OF 5-(2-HALO-4-TRIFLUOROMETHYLPHENOXY)-2-NITROBENZOIC ACID AND SALTS AND ESTERS AND AMIDES

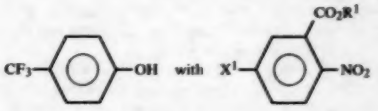
Colin Swithenbank, Perkasie, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed Nov. 16, 1981, Ser. No. 321,658
Int. Cl.³ C07C *99/00*
U.S. Cl. 562—435 5 Claims

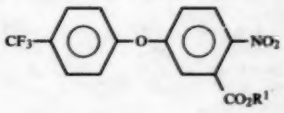
1. A process for preparing substantially pure and isomer free compound of the formula:



wherein X^1 is halo and R^1 is hydrogen, alkyl, alkenyl, alkynyl, hydroxyalkyl, carboxyalkyl, carbalkoxyalkyl, cyanoalkyl, alkoxyalkyl, haloalkyl, alkali metal or alakline earth metal cations, quaternary ammonium cations, amino, mono- R^1 or di-R^1 amino wherein R^1 is as defined above which comprises reacting



in the presence of an inorganic base in a polar solvent at a temperature in the range of from about 25° to 90° C. for from 1 to 18 hours to afford a substantially isomer free product of the formula:



followed by treating said product with a halogenating agent in the presence of a Friedel-Crafts catalyst at at temperature in the range of from 50° to 130° C. for from 0.5 to 10 hours.

4,395,571

PROCESS FOR THE PREPARATION OF D,1-2-(6-METHOXY-2-NAPHTHYL)PROPIONIC ACID

Charles A. Dvorak, Palo Alto, Calif., assignor to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Jun. 3, 1982, Ser. No. 384,445
Int. Cl.³ C07C *65/105*
U.S. Cl. 562—466 17 Claims

1. A process for isolating a condensation product of d-2-(6-methoxy-2-naphthyl)propanal comprising

crystallizing the condensation product of d-2-(6-methoxy-2-naphthyl)propanal with N-R-D-glucamine or a salt thereof wherein R is hydrogen, alkyl of 1 to 36 carbon atoms or cycloalkyl of 3 to 8 carbon atoms from a mixture containing a first condensation product of d-2-(6-methoxy-2-naphthyl)propanal with N-R-D-glucamine or a salt thereof and a second condensation product of l-2-(6-methoxy-2-naphthyl)propanal with N-R-D-glucamine or a salt thereof in an inert solvent, the first condensation product being significantly less soluble in the inert solvent than the second condensation product at the crystallization temperature of the first condensation product.

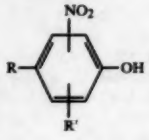
4,395,572

PROCESS FOR PREPARING N-ALKYL-NITROANILINES

John K. Chan, Charleston, W. Va., assignor to Union Carbide Corporation, Danbury, Conn.

Continuation-in-part of Ser. No. 107,537, Dec. 27, 1979, Pat. No. 4,289,907. This application Apr. 20, 1981, Ser. No. 255,425
The portion of the term of this patent subsequent to Sep. 15, 1998, has been disclaimed.
Int. Cl.³ C07C *89/02, 85/06*
U.S. Cl. 564—399 7 Claims

1. A process for producing N-alkyl-nitroaniline comprising:
(a) reacting a nitrophenol of the formula:



wherein R is CF_3, and wherein R′ is selected from the group consisting of hydrogen, nitro and CF_3, with an alkylating compound selected from the group consisting of ethylene oxide, propylene oxide, styrene oxide, and mixtures thereof, to form an intermediate product and
(b) reacting said intermediate product with an amine selected from the group consisting of methylamine, ethylamine, isopropylamine, propylamine, butylamine, and mixtures thereof, to produce said N-alkyl-nitroaniline.

4,395,573

PRODUCTION AND SEPARATION OF AMINES

Charles E. Cutchens; Marion J. Mathews, III, and Mark S. Sowell, III, all of Pensacola, Fla., assignors to Monsanto Company, St. Louis, Mo.

Filed Nov. 23, 1981, Ser. No. 324,189
Int. Cl.³ C07C *87/14, 87/16*
U.S. Cl. 564—492 6 Claims

1. In a process for the production of an amine from a nitrile where the nitrile is hydrogenated under pressure in the presence of a Raney nickel catalyst continuously in a reactor thereby to produce the amine which is discharged in a stream from which is recovered both the amine and the Raney nickel catalyst, where the Raney nickel catalyst is passivated by charging to the process discharge stream comprising the product amine and the Raney nickel catalyst an inorganic base, and where the product amine is subsequently separated from the Raney nickel catalyst and the inorganic base, the improvement wherein the separation is characterized by mixing the inorganic base with the process discharge stream to form a separable mixture, decanting the separable mixture so as to remove the upper layer comprising substantially catalyst-free amine from the lower layer comprising the aqueous solution of the inorganic base, and intermittently purging Raney nickel catalyst at the interface of the amine phase and the inorganic base phase.

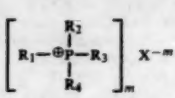
4,395,574

PHOSPHONIUM PHENOXIDE CATALYSTS FOR PROMOTING REACTION OF EPOXIDES WITH PHENOLS AND/OR CARBOXYLIC ACIDS

George A. Doorakian, Bedford, Mass., and James L. Bertram, Lake Jackson, Tex., assignors to The Dow Chemical Co., Midland, Mich.

Division of Ser. No. 148,875, May 12, 1980, Pat. No. 4,302,574, which is a continuation-in-part of Ser. No. 41,567, May 23, 1979, abandoned. This application Jul. 30, 1981, Ser. No. 288,613
Int. Cl.³ C07F *9/54*
U.S. Cl. 568—11 11 Claims

1. A compound represented by the formula



I

or a complex of the compound represented by Formula I with one or more equivalents of a phenol, H_mX, wherein
(1) R_1–R_4 each independently is a hydrocarbyl or inertly-substituted hydrocarbyl;
(2) X is a phenoxide anion, said anion being a conjugate base of a polyhydric phenol bearing from 2 to 6 nuclear hydroxyl groups and having from about 12 to about 30 carbon atoms; and
(3) m is the valence of the anion X.

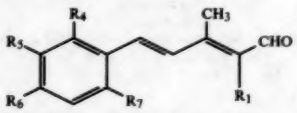
4,395,575

5(HALOPHENYL)-2-FLUORO-PENTADIENALS

Ka-Kong Chan, Hopatcong, and Beverly A. Pawson, Verona, both of N.J., assignors to Hoffmann-La Roche, Inc., Nutley, N.J.

Division of Ser. No. 278,224, Jun. 29, 1981, Pat. No. 4,335,248, which is a division of Ser. No. 149,389, May 13, 1980, Pat. No. 4,299,995, which is a division of Ser. No. 37,803, May 10, 1979, Pat. No. 4,231,944, which is a division of Ser. No. 936,466, Aug. 24, 1978, Pat. No. 4,171,318, which is a continuation-in-part of Ser. No. 809,738, Jun. 24, 1972, Pat. No. 4,137,246, which is a continuation-in-part of Ser. No. 722,939, Sep. 13, 1976, abandoned, which is a continuation-in-part of Ser. No. 632,028, Nov. 14, 1975, abandoned. This application Mar. 3, 1982, Ser. No. 354,331
Int. Cl.³ C07C *47/238*
U.S. Cl. 568—442 2 Claims

1. A compound of the formula:



XXVII

wherein R_1 is fluorine; at least one of R_4, R_5 and R_7 is halogen and the others are hydrogen or lower alkyl; and R_6 is lower alkyl or lower alkoxy.

2. The compound of claim 1 wherein the compound is 2Z,4E-2-fluoro-3-methyl-5-(2,6-dichloro-3-methyl-4-methoxyphenyl)-pentadien-1-al.

4,395,576

PROCESS FOR THE PREPARATION OF ETHANOL

Arien Kwantes, Amsterdam, and Cornelis W. J. De Goederen, The Hague, both of Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Jun. 11, 1981, Ser. No. 272,617
Claims priority, application Netherlands, Jun. 12, 1980, 8003405
Int. Cl.³ C07C *29/04, 29/80*
U.S. Cl. 568—913 12 Claims

1. A process for the preparation of ethanol by catalytic hydration of ethylene in a reaction section, in which process aqueous crude ethanol containing both higher- and lower-boiling impurities is obtained by condensing and scrubbing the gaseous reaction mixture and in a purifying section the aqueous crude ethanol is passed into a first distillation column, a top fraction containing the greater portion of the impurities is discharged from said column, the bottom product of the first distillation column is passed to a second distillation column, ethanol-water azeotrope is recovered as a side stream from the upper part of the second distillation column, one or more side streams containing high-boiling impurities are passed from a

lower part of the second distillation column to a third distillation column, a top fraction containing lower-boiling impurities is removed from the third column, an ethanol-containing side stream is discharged from the upper part of the third column and one or more side streams containing higher-boiling impurities are removed from a lower part, characterized in that the top fraction of the first distillation column is wholly or partly hydrogenated at a pressure between 10 and 50 bar abs. and a temperature between 60° C. and 140° C., the hydrogenated product is fractionated in the third distillation column, and that the top fraction obtained by fractionation in the third column is recycled completely or partly into the reaction section.

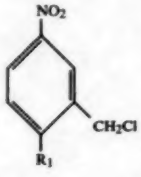
4,395,577

PREPARATION OF 3-CHLOROMETHYL-4-ALKYL-NITROBENZENE BY CHLOROMETHYLATION

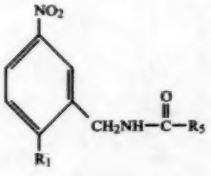
Donald R. Maulding, Somerville, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed Oct. 22, 1981, Ser. No. 313,855
Int. Cl.³ C07C *79/12*
U.S. Cl. 568—936 **3 Claims**

1. A process for the preparation of a compound of structural formula:



wherein R_1 is C_1–C_4 alkyl, comprising reacting an amide of structural formula:



wherein R_1 is C_1–C_4 alkyl, R_5 is C_1–C_4 alkyl, C_2–C_4 alkenyl, or phenyl, with phosphorus oxychloride alone or with phosphorus oxychloride in the presence of a solvent methylene chloride, chloroform, ethylene dichloride, benzene, toluene, xylene, chlorobenzene, dimethylformamide or mixtures thereof, at elevated temperatures up to and including the boiling point of the solvent or solvent misture, for a period of time sufficient to essentially complete the reaction, and wherein the amide to phosphorus oxychloride molar ratio is in the range of from 1:1 to 1:4; with the condition that when one of the components of the solvent mixture is dimethylformamide, then it is present in the solvent mixture in amounts of one to three molar equivalents per mole of amide.

4,395,578

OLIGOMERIZATION OF OLEFINS OVER BORON TRIFLUORIDE IN THE PRESENCE OF A TRANSITION METAL CATION-CONTAINING PROMOTER

John M. Larkin, Austin, Tex., assignor to Texaco, Inc., White Plains, N.Y.

Filed Jun. 18, 1982, Ser. No. 389,738
Int. Cl.³ C07C *1/16, 2/02*
U.S. Cl. 585—10 **47 Claims**

1. A process for oligomerizing mono olefins comprising contacting a mixture of alpha mono olefins having between 3 and 18 carbon atoms, inclusive, with a catalyst comprising boron trifluoride in the presence of an inorganic promoter containing a transition metal cation, under oligomerization conditions.

38. A synthetic lubricant component having a viscosity at 210° F. of between 3.5 and 5.0 centistokes being produced by oligomerizing a mixture of alpha mono olefins which consists essentially of low molecular weight alpha olefins having 3 to 5 carbon atoms and higher molecular weight alpha olefins having 8 to 18 carbon atoms, by means of contacting the alpha olefins with boron trifluoride in the presence of an inorganic promoter containing a transition metal cation, under oligomerization conditions, and subsequently hydrogenating the oligomerized olefins.

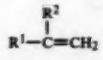
4,395,579

LI-SPINEL CATALYST FOR NON-OXIDATIVE DEHYDROGENATION PROCESS

Gilbert R. Germaine, and Jean P. Darnanville, both of Grand Couronne, France, assignors to Shell Oil Company, Houston, Tex.

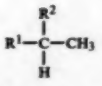
Division of Ser. No. 333,007, Dec. 21, 1981, Pat. No. 4,372,879. This application Nov. 4, 1982, Ser. No. 439,150
Claims priority, application France, Dec. 29, 1980, 80 27673
Int. Cl.³ C07C *2/64, 5/09, 5/333*
U.S. Cl. 585—444 **19 Claims**

1. A process for the preparation of a compound having the general formula:



(I)

wherein R^1 and R^2 each represent an alkyl, an alkenyl or a phenyl group or a hydrogen atom, by non-oxidative dehydrogenation of a compound having the general formula:



(II)

wherein R^1 and R^2 have the same meaning as in formula I, in which process a mixture comprising a compound of formula II and superheated steam is contacted at elevated temperature with a catalyst comprising a composition having a spinel structure with lithium coordinated in the spinel structure, an alkali metal oxide not forming a part of the spinel structure and a vanadium oxide not forming part of the spinel structure.

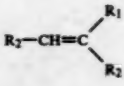
4,395,580

PROCESS FOR PRODUCING AN OLEFIN BY DECOMPOSITION OF THE CORRESPONDING ETHER

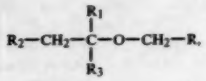
Bernard Juguin, Rueil-Malmaison; Jean Miquel, Paris; Michel Hellin, Andresy, and Bernard Torck, Boulogne sur Seine, all of France, assignors to Institut Francais Du Petrole, Rueil-Malmaison, France

Filed Oct. 29, 1981, Ser. No. 316,376
Claims priority, application France, Oct. 29, 1980, 80 23183
Int. Cl.³ C07C *1/00, 1/24*
U.S. Cl. 585—639 **22 Claims**

1. A process for producing a tertiary olefin of the formula:



by decomposition of the corresponding tertiary ether of the formula:

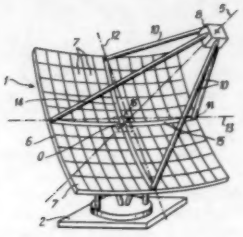


wherein R_1 and R_3 are each independently an alkyl, arylalkyl, aryl or alkylaryl radical; and R_2 and R are each independently a hydrogen atom or an alkyl, arylalkyl, aryl or alkylaryl radical, said process comprising the step of contacting said ether, in the presence of steam, the molar ratio H_2O/tertiary ether being from 2 to 8, with a catalyst consisting essentially of alumina having deposited thereon at least one modifying agent, said agent being titanium, zirconium or hafnium, as the elemental metal or a metal compound, the content of said metal or metal compound, expressed as the elemental metal, being 0.01–5% by weight with respect to the alumina, said alumina, after incorporation of the metal or metal compound, having a specific surface of 80–300 m^2/g; whereby the tertiary olefin is produced in high purity, and parasitic side-reactions which decrease the yields of tertiary olefin and of recovered alcohol are minimized.

4,395,581
CONCAVE MIRROR CONSTITUTED BY A PLURALITY OF PLANE FACETS AND SOLAR GENERATOR COMPRISING SUCH A MIRROR

Alain Girard, Cros de Cagnes, France, assignor to Societa Nationale Industrielle Aerospatiale, Paris, France

Filed Feb. 11, 1982, Ser. No. 347,899
Claims priority, application France, Feb. 20, 1981, 81 03409
Int. Cl.³ G02B *5/08*; H01L *31/04*
U.S. Cl. 136—246 **11 Claims**



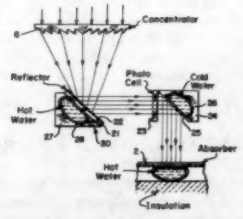
1. In a concave mirror which is adapted to provide when aimed towards a remote light source such as the sun, a useful focal or quasi-focal spot of at least approximately square or rectangular form and of predetermined dimensions, said useful spot being centred on the axis of said mirror, the reflecting surface of said mirror being constituted by a plurality of identical planar facets whose shape and dimensions correspond to those of said useful spot and which are disposed in rows and in columns, so that the section of the reflected beam coming from each planar facet totally covers said useful spot, the two dimensions of said facets being such that the square root of their product is at least approximately equal to the ratio of the focal distance of the mirror and of the square root of the concentration factor of said mirror.

8. A solar generator comprising a solar concentrator and an arrangement of photovoltaic cells, wherein said solar concentrator is constituted by the mirror of claim **1**, and the sensitive face of said arrangement of photovoltaic cells corresponds at least approximately in shape and in dimensions to said useful focal or quasi-focal spot and is superposed thereon.

4,395,582
COMBINED SOLAR CONVERSION

Dorel J. Damsker, New York, N.Y., assignor to Gibbs & Hill, Inc., New York, N.Y.

Filed Mar. 28, 1979, Ser. No. 24,791
Int. Cl.³ H01L *31/04*; F24J *3/02*
U.S. Cl. 136—248 **5 Claims**



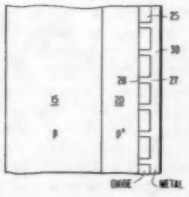
3. A combined solar converter adapted to be exposed to a source of solar radiation, comprising a photovoltaic cell sensitive to solar radiation of a particular range of wavelengths so as to convert the energy of part of said radiation of particular range to electricity, wherein said cell is transparent and thus insensitive to solar radiation of shorter and longer wavelengths than said particular range, an energy absorber positioned to receive radiation of said longer wavelengths passing through said cell for converting the energy of the same to heat, a first optical wavelength shifting means positioned between the radiation source and said cell for shifting radiation of said shorter wavelengths to longer wavelengths to come within said particular range, and a second optical shifting means positioned on the opposite side of said cell from said first optical shifting means for shifting radiation passing through said cell into longer wavelengths and for reflecting the shifted radiation of longer wavelengths back towards said cell.

5. A combined solar converter adapted to be exposed to a source of solar radiation, comprising a photovoltaic cell sensitive to solar radiation of a particular range of wavelengths so as to convert the energy of part of said radiation of particular range to electricity, wherein said cell is transparent and thus insensitive to solar radiation of shorter and longer wavelengths than said particular range, an energy absorber spaced from said cell and positioned to receive radiation of shorter and longer wavelengths passing through said cell for converting the energy of the same to heat, and optical wavelength shifting means comprising a glass surface coated with doped indium oxide positioned between the radiation source and the cell for shifting radiation of shorter wavelengths to longer wavelengths to come within said particular range.

4,395,583
OPTIMIZED BACK CONTACT FOR SOLAR CELLS

Andrew Meulenberg, Jr., Gaithersburg, Md., assignor to Communications Satellite Corporation, Washington, D.C.

Continuation-in-part of Ser. No. 145,104, Apr. 30, 1980, abandoned. This application Oct. 20, 1981, Ser. No. 313,081
Int. Cl.³ H01L *31/06*
U.S. Cl. 136—256 **28 Claims**



1. A solar cell having a first extrinsic semiconductor layer providing majority carriers of a first electrical charge, a second semiconductor layer adjacent to said first layer, and a back contact optimized to reduce effective surface recombination, said optimized back contact comprising:

(a) a third extrinsic semiconductor layer having a thickness (W) substantially less than its minority carrier diffusion length (L), adjacent to said second layer to form a first interface having a low effective surface recombination velocity, said third layer providing a number of majority carriers of a second electrical charge opposite to said first electrical charge;

(b) a non-metallic coating deposited on said third layer to form a second interface having a low surface recombination velocity, said non-metallic coating having a plurality of micro holes provided therethrough, the total area of said micro holes being small relative to the total area of said non-metallic coating; and

(c) a metal coating deposited on said non-metallic coating to thereby provide electrical contacts from said metal coating to said third layer through said micro holes to form a third interface at said electrical contacts,

wherein the ratio (W/L) of the width (W) of said third layer to the minority carrier diffusion length (L) in said third layer is chosen so as to reduce the quantity:

$$\frac{A_o(x/y)(W \cdot D/L^2) + A_m(x/y)(D/W)}{A_{total}}$$

below (x/y)(D/L) where x and y are the minority carrier concentrations in said third and second layers, respectively; D is the minority carrier diffusion coefficient of said third layer; and A_o, A_m and A_{total} are the relative areas of said second, third and first interfaces, respectively.

4,395,584

CABLE SHAPED CRYOGENICALLY COOLED STABILIZED SUPERCONDUCTOR

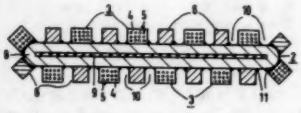
Günter Ries, Weingarten, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jun. 17, 1981, Ser. No. 274,441

Claims priority, application Fed. Rep. of Germany, Jun. 25, 1980, 3023856

Int. Cl.³ H01B *12/00*; H01F *7/22*

U.S. Cl. 174—15 S **8 Claims**



1. In a cable shaped cryogenically stabilized heavy current superconductor structure including several superconducting elements which contain wires of superconductive material embedded in a matrix material of predetermined electric conductivity; stabilizing elements of a thermally and electrically highly conductive material which is normally conducting at the operating temperature of the superconductor structure extending parallel thereto, the electric conductivity of said stabilizing elements being substantially higher in the normally conducting state of the heavy current superconductor than that of the matrix material of the superconducting elements; and a support body of a material of relatively low thermal and electric conductivity, on which said stabilizing elements and said superconducting elements are fastened, the improvement comprising: the stabilizing elements being arranged physically separated at a predetermined spacing from the respective adjacent superconducting elements so that only a poorly heat conducting connection and moderate ohmic coupling is provided between said stabilizing elements and superconducting elements, and the spacings so formed between adjacent superconducting elements and the stabilizing elements being, at least largely, filled with a cryogenic coolant.

4,395,585

MULTIPLE USE COMPONENT SPACER AND METHODS FOR PREPARING A SPACER FOR MOUNTING ON AND AFFIXING A SPACER TO A CIRCUIT BOARD

Erwin R. Polcyn, Scottsdale, Ariz., assignor to Motorola Inc., Schaumburg, Ill.

Filed Nov. 19, 1981, Ser. No. 322,969

Int. Cl.³ H05K *7/08, 3/30*

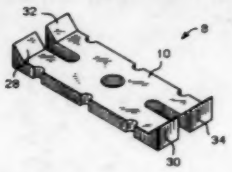
U.S. Cl. 174—138 G **5 Claims**

1. A multiple use component spacer, having a circumference and a plurality of surfaces for use in conjunction with a circuit board and components to be mounted on said board, said spacer comprising:

a central portion having a component platform surrounding a lead receiving aperture suitable for passing a lead to be soldered to the circuit board;

a first lead grasping portion affixed to said central portion, directed outwardly therefrom in a first direction and having a resilient forked portion defining a lead receiving slot;

a second lead grasping portion having a resilient forked portion defining a lead receiving slot affixed to said central portion and directed outwardly therefrom in a direction different from that of said first lead grasping portion;



a plurality of lead abutment portions distributed about the circumference of the spacer; and

means for providing elevation of said component platform above a circuit board, said means for providing elevation being located on at least one of the surfaces of the spacer.

4,395,586

HOLDING DEVICE FOR ELECTRICAL THIN LAYER RESISTANCE

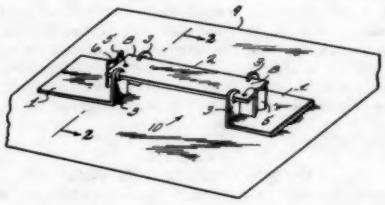
Kurt Elermann, Pfungstadt; Eberhard Horlebein, Mainaschaff, and Wolfgang Schäfer, Frankfurt, all of Fed. Rep. of Germany, assignors to Degussa AG, Frankfurt, Fed. Rep. of Germany

Filed Jun. 28, 1982, Ser. No. 392,478

Claims priority, application Fed. Rep. of Germany, Jul. 9, 1981, 3127097

Int. Cl.³ H01B *17/56*

U.S. Cl. 174—138 J **6 Claims**



1. A device for holding a plate-shaped thin layer electrical resistance of the type where a thin metal layer is carried on an electrically insulating carrier, said device comprising holding clamp means, said holding clamp means including at least three pointed support means and at least two clip means each provided with spikes being arranged to press a thin layer resistance located between said spikes and said support means toward said support means.

4,395,587

METHOD AND APPARATUS FOR REPRESENTING CHARACTERS

Karl Hans, Munich, and Helmut Hackstein, Calw-Altburg, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Oct. 26, 1981, Ser. No. 315,036

Claims priority, application Fed. Rep. of Germany, Dec. 8, 1980, 3046216

Int. Cl.³ H04L *13/08*

U.S. Cl. 178—30 **13 Claims**

1. A method for representing characters on a recording medium in a printing station either as an individual symbol, a

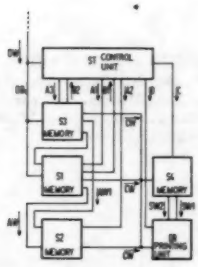
sequence of symbols, or a plurality of overstruck symbols, said characters received in the form of encoded data words from an input means, said data words having at least one code word associated therewith for actuating printing of a selected symbol at said printing station, comprising the steps of:

supplying a data word to a first memory containing code words and address words for a second memory stored at respective addresses corresponding to said data words;

releasing a code word corresponding to said data word which was supplied to said first memory to said printing station if said data word corresponds to a character representable by an individual symbol for printing said individual symbol;

releasing an address word corresponding to said data words supplied to said first memory to said second memory if said data word corresponds to a character representable by a plurality of overstruck symbols,

said second memory containing groups of code words and associated position words stored at respective groups of consecutive addresses beginning with said address word, said groups of code words and associated position words respectively corresponding to the symbols and the positions therefor for said characters representable by overstruck symbols;



releasing a selected group of code words and associated position words from said second memory to said printing station for printing the overstruck symbols comprising said character;

supplying a selected plurality of data words to a third memory corresponding to said characters representable by a sequence of symbols,

said third memory containing code words and address words for said second memory at respective addresses corresponding to selected ones of said data words;

releasing a sequence of code words to said printing station from said third memory for printing a sequence of symbols corresponding thereto if addresses corresponding to the data words supplied to said third memory are stored in said third memory;

releasing said data words supplied to said third memory consecutively from said third memory to said first memory if the addresses corresponding to the data words are not stored in said third memory for processing in said first memory and subsequent printing of symbols corresponding thereto; and

releasing said address words corresponding to said data words supplied to said third memory from said third memory to said second memory for processing therein if necessary and subsequent printing of symbols corresponding thereto.

4,395,588

MFB SYSTEM WITH A BY-PASS NETWORK

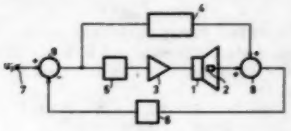
Nico V. Franssen, deceased, late of Knegsel, Netherlands; Friedrich J. de Haan, administrator, Dommelen, Netherlands; Adrianus J. M. Kaizer, and Cornelis A. M. Wesche, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 9, 1981, Ser. No. 241,992

Claims priority, application Netherlands, Mar. 18, 1980, 8001592

Int. Cl.³ H04R 9/06

U.S. Cl. 179—1 F **16 Claims**



1. A device for converting an electric signal into an acoustic signal comprising, an electroacoustic transducer, means for driving said electroacoustic transducer, a pick-up element for supplying an electric output signal which is a measure of the acoustic output signal of the transducer, a by-pass network which electrically bypasses at least the transducer and the pick-up element, a combination unit for combining the output signal of the pickup element and the output signal of the by-pass network, and a feedback circuit for feeding back to the transducer driving means the output signal of the combination unit as a negative feedback signal, characterized in that the by-pass network is adapted to produce an output signal which for frequencies within the operating frequency range of the transducer is small and for frequencies above and below the operating frequency range of the transducer is large relative to the output signal of the pickup element.

4,395,589

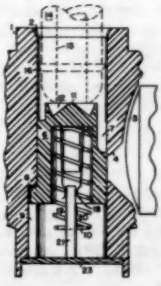
ELECTRO-ACOUSTICAL STRUCTURE

Douglas J. Williams, Huntington Beach, Calif., assignor to EECO Incorporated, Santa Ana, Calif.

Filed Jul. 6, 1981, Ser. No. 280,650

Int. Cl.³ H04R 1/10

U.S. Cl. 179—1 SW **9 Claims**



1. An electro-acoustical structure comprising;

(a) a body (1) having at least one aperture (2) for receiving an acoustic-use plug (14),

(b) a hollow piston valve (6) within said aperture,

(c) a coiled spring (10) within said aperture and bearing outwardly against said piston valve with respect to said aperture,

(d) a port (4) having an electro-acoustical transducer (3)

within said body and acoustically communicating with said aperture,

(e) a companion port (7) within said piston valve so related to said port (4) that when an acoustic-use plug is inserted into said aperture an acoustic channel exists from said transducer, through said port, through said companion port, and into the acoustic-use plug,

(f) a bifurcated electrically conductive switch member (18) disposed within said piston valve, and

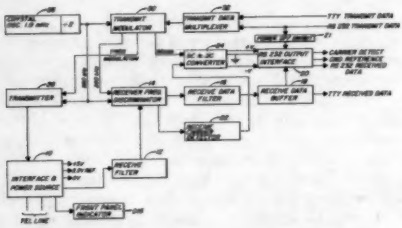
(g) linear stationary contacts (19,20) to close an electrical circuit in coaction with said bifurcated switch member, when said piston valve is depressed within said aperture.

4,395,590

LINE POWERED MODEM

O. Leon Pierce; Mark C. Smith, and R. Byron Driver, all of Huntsville, Ala., assignors to Universal Data Systems, Inc., Huntsville, Ala.

Filed Nov. 3, 1980, Ser. No. 203,108
Int. Cl.³ H04M *19/00*
U.S. Cl. 179—2 DP **20 Claims**



1. A telephone line powered modem comprising:

a first circuit for coupling to a telephone line and operative wholly in response to telephone line power to provide operating power for all modem circuits;

said first circuit including a solid state shunt regulator circuit providing a voltage which is substantially constant irrespective of variations in current from the telephone line, and a current source operating as a constant current source for AC and self adjusting for DC current and operative to provide a low DC resistance and high AC impedance such that audio frequency variations in line voltage cause no appreciable current change through the load;

a modem receiver subsystem powered by the first circuit and operative to provide data signals derived from signals received on the telephone line; and

a modem transmitter subsystem powered by the first circuit and operative in response to data from a source to provide modulated data signals to the telephone line.

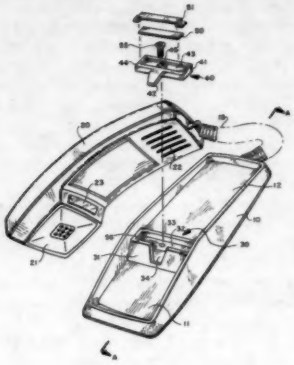
4,395,591

ARRANGEMENT FOR SUPPORTING A TELEPHONE HANDSET OR THE LIKE

John E. Kaczkos, Elk Grove Village, Ill., assignor to GTE Automatic Electric Labs Inc., Northlake, Ill.

Filed Oct. 5, 1981, Ser. No. 308,863
Int. Cl.³ H04M *1/02*
U.S. Cl. 179—100 R **4 Claims**

3. A telephone base arranged to accept a telephone handset on a face thereof, said handset including an orifice and said face including a support structure transversely oriented along said face, said support structure including a T-shaped cavity arranged to substantially accept therein a similarly shaped handset retainer, said handset retainer including a body portion and a hook portion each substantially accepted within said cavity in a first stored position and said handset retainer alternatively positionable into a second position having said body portion substantially accepted within said T-shaped cavity with said hook portion extending outwardly of said cavity, whereby said



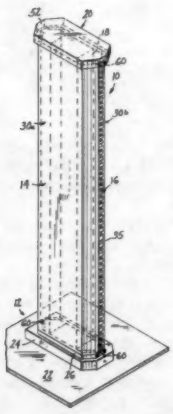
hook is accommodated by said handset orifice retaining said handset to said base.

4,395,592

RIBBON LOUDSPEAKER

Thomas P. Colangelo, Hamden, Conn., assignor to Mark Levinson Audio Systems Ltd., Middletown, Conn.

Filed Mar. 6, 1981, Ser. No. 241,401
Int. Cl.³ H04R *7/02*
U.S. Cl. 179—115 V **12 Claims**



1. A ribbon loudspeaker comprising:

an elongated permanent magnet of substantially rectilinear structure having two pairs of opposite faces;

a pair of pole pieces, each contacting against opposite faces and extending outwardly from said faces to form a pair of magnetic gaps, said gaps being parallel to and spaced apart from said second pair of faces and extending the length of said faces; and

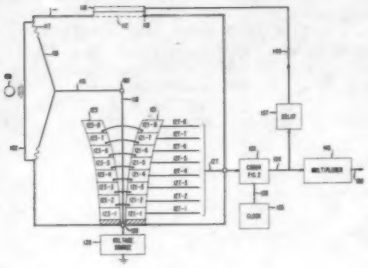
a ribbon for sound reproduction continuously wound around said magnet and received in and extending the length of said gaps.

4,395,593

ACOUSTIC DIFFERENTIAL DIGITAL CODER

James L. Flanagan, Warren, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation of Ser. No. 97,808, Nov. 27, 1979, abandoned. This application Jul. 31, 1981, Ser. No. 288,790
Int. Cl.³ H04M 1/00; H04R 3/00, 19/00, 23/00
U.S. Cl. 179—1 F 23 Claims



1. Apparatus for converting sounds into coded digital signals comprising a closed chamber having at least first and second apertures therein;

a vibratory diaphragm having its periphery fastened to the periphery of said first aperture;

means for applying a first sound wave to said diaphragm from outside said chamber;

means responsive to the motion of said diaphragm for generating a quantized signal representative of the diaphragm motion;

and means responsive to the quantized signal for producing a coded digital signal;

CHARACTERIZED IN THAT

means (110) connected to said chamber (101) at the second aperture (119) are adapted to convert said coded digital signal into a second sound wave and to direct said second sound wave into said chamber to modify the motion of said diaphragm (103); said produced digital signal corresponding to the difference between said first and second sound waves.

22. Apparatus for converting coded digital signals into sound comprising

a cylindrical electret,

at least one insulative cylindrical wall, the first insulative cylindrical wall being concentric with and surrounding the cylindrical electret,

at least one ring electret, the first ring electret being concentric with and surrounding the first insulative cylindrical wall, the successive ring electrets each being concentric with and surrounding one of the insulative cylindrical walls,

said electrets and insulative walls forming an assembly having a sound emitting end with each electret being acoustically isolated from the other electrets,

means for selectively applying coded digital signal elements to said acoustically isolated electrets,

a first cavity extending from said sound emitting end adapted to acoustically sum sound waves from the acoustically isolated electrets,

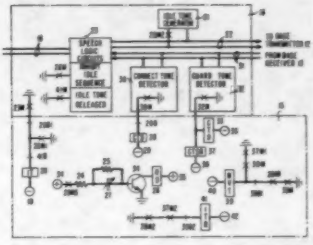
and a second cavity extending from said first cavity adapted to restrict the frequency range of the summed sound waves.

4,395,594

METHOD AND APPARATUS FOR FORCING RANDOMIZATION OF IDLE CHANNEL SEIZURES

John A. Meyerle, Manasquan, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 24, 1981, Ser. No. 295,858
Int. Cl.³ H04M 11/00
U.S. Cl. 179—2 EB 6 Claims



2. In a communication system including at least one user-shared-access communication channel and a first station for controlling the access of multiple, remotely located users to that channel by applying to said channel a signal indicating the availability thereof for access by a user, and wherein user station equipment seeking access initiates a predetermined program of access-requesting signals, and, if thereafter the availability signal is still present on the channel, said equipment reinitiates said program at least once, said first station comprising

means for receiving from said channel an access-request signal indicating that a user is requesting access to said channel,

means, responsive to said access-request signal, for removing from said channel said availability signal, and

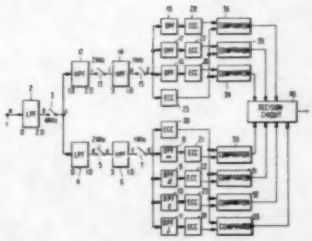
means for inhibiting the response of said removing means to an access-request signal for a time interval of randomly selectable duration, at least as long as said program, after initial application of said availability signal.

4,395,595

DIGITAL PUSHBUTTON SIGNALLING RECEIVER

Takao Nishitani, and Tadaharu Kato, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Apr. 7, 1981, Ser. No. 251,829
Claims priority, application Japan, Apr. 23, 1980, 55-53893
Int. Cl.³ H04M 1/50
U.S. Cl. 179—84 VF 5 Claims



1. A digital pushbutton signalling receiver responsive to an input pushbutton (PB) telephone signal digitized at a first sampling frequency and containing two frequency components, one component consisting of one frequency signal selected out of a predetermined plurality of a lower group of frequencies and a second component consisting of one fre-

quency signal selected out of a predetermined plurality of a higher group of frequencies, comprising:

(a) first means responsive to said input signal for successively digitally filtering and resampling said input signal at selected filtering bands and successively reducing sampling frequencies by $\frac{1}{4}$ to produce a first means output digital signal containing all of said lower group of frequencies frequency transposed to first corresponding lower group of frequencies;

(b) second means responsive to said input signal for successively digitally filtering and resampling said input signal at selected filtering bands and successively reducing sampling frequencies by $\frac{1}{4}$ to produce a second means output digital signal containing all of said higher group of frequencies frequency transposed to second corresponding lower group of frequencies;

(c) a first group of digital band pass filters, each centered at different ones of said frequencies of said first corresponding lower group of frequencies, connected to receive said first means output digital signal;

(d) first energy calculating means for calculating the energy content of said first means output digital signal and the outputs from each of said first group of digital band pass filters;

(e) first comparison means responsive to the outputs from said first energy calculating means for providing an output indicating the presence and identity of any of said predetermined plurality of lower frequencies in said input in-band audio frequency signal;

(f) a second group of digital band pass filters, each centered at different ones of said frequencies of said second corresponding lower group of frequencies, connected to receive said second means output digital signal;

(g) second energy calculating means for calculating the energy content of said second means output digital signal and the outputs from each of said second group of digital band pass filters, and

(h) second comparison means responsive to the outputs from said second energy calculating means for providing an output indicating the presence and identity of any of said predetermined plurality of higher frequencies in said input-in-band audio frequency signal.

4,395,596

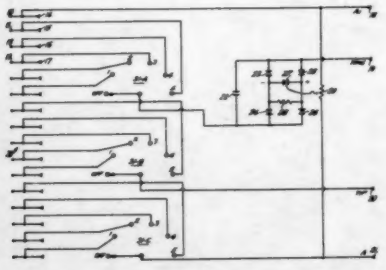
MULTI-LINE CONTROLLER

Harold N. Leitman, 58 Talcot Rd., Portchester, N.Y. 10573, and Walter J. Lange, 115 Columbia Ave., Jersey City, N.J. 07307

Filed Nov. 2, 1981, Ser. No. 313,541

Int. Cl.³ H04M 1/00

U.S. Cl. 179—99 LC **3 Claims**



1. A multi-line controller for connecting single line telephone accessory equipment to a multi-line telephone system, comprising,

means for selectively connecting said single line telephone accessory equipment to a particular incoming line of sid multi-line telephone system, and

means operative when said single line telephone accessory equipment is connected to said particular line, and responsive to said single line equipment going off hook, for providing an A and A1 closure signal to the multi-line telephone system.

4,395,597

SPEAKER DIAPHRAGM ASSEMBLY AND A METHOD OF MANUFACTURING THE SAME

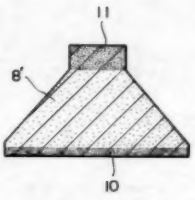
Kiyoaki Suzuki; Masaru Watanabe; Hisashi Yamamoto; Tomoharu Hayashi, and Takuji Miura, all of Yokohama, Japan, assignors to Victor Company of Japan, Limited, Yokohama, Japan

Filed Sep. 24, 1980, Ser. No. 191,089

Claims priority, application Japan, Sep. 25, 1979, 54-131402[U]; Sep. 25, 1979, 54-131406[U]; Sep. 25, 1979, 54-131407[U]; Sep. 29, 1979, 54-133938[U]

Int. Cl.³ H04R 7/02, 9/06, 31/00

U.S. Cl. 179—115.5 R **30 Claims**



7. A speaker diaphragm assembly comprising:

(a) a foam resin body having front and rear end portions, said foam resin having uniform density throughout the inside of said body as is obtained by heating a first raw material having a relatively great foam magnification; and

(b) a sound radiating surface portion of the same sort of resin as said foam resin and integrally formed with said front end portion of said body, said foam resin of said sound radiating surface portion having a density greater than that at the inside of said body as formed by heating a second raw material having a relatively small foam magnification.

4,395,598

ELECTRO-ACOUSTIC TRANSDUCER CAUSING SOUND WAVES TO BE IN PHASE AT ANY POINT BY PREVENTING REFLECTION FROM THE BACK END OF THE DIAPHRAGM TO STRESS APPLYING MEANS

Philippe M. Lesage, Nogent-sur-Marne, France, assignor to Societe Audax, Montreuil, France

PCT No. PCT/FR79/00109, § 371 Date Jul. 16, 1980, § 102(e) Date Jul. 15, 1980, PCT Pub. No. WO80/01128, PCT Pub. Date May 29, 1980

PCT Filed Nov. 16, 1979, Ser. No. 212,089

Claims priority, application France, Nov. 16, 1978, 78 32386

Int. Cl.³ H04R 9/04

U.S. Cl. 179—115.5 R **6 Claims**

1. An electro-acoustical transducer comprising:

a motor for imparting vibrations to a shaped membrane;

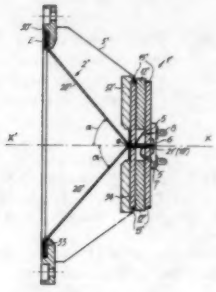
a shaped membrane in the form of a dihedron constituting the site of vibrations responsible for sound transmission, said dihedron having a predetermined half angle α to transmit said vibrations from said membrane at a velocity V_m being approximately equal to $V_0/\cos \alpha$ where V_0 is a velocity of sound in air;

said membrane having two side edges, a front end and a rear end, the front end constituting the two front surfaces of the dihedron, the rear end constituting the rear surfaces of the dihedron, and the side edges adapted for secure attachment to the chassis at the rear of the membrane;

a chassis having front and rear portions constituting the supporting structure for said motor and said membrane;

an air gap defined between the intersecting planar surface of the dihedron which constitutes the rear end of said membrane and the moving portion of said motor, and the stationary portion of said motor which is spaced from said membrane which is fixed by said chassis with the membrane centered in said air gap;

said chassis centering said air gap which is located at the center of said membrane along a plane of symmetry passing through the vertex of the dihedron along the fold of the dihedron and adjacent said motor whereby the plane of symmetry bisects the angle of the dihedron to provide the predetermined angle α and permits the placement of a stress tensioning means to apply stress to the front of the membrane from a position behind the membrane and attached to the rear portion of said chassis;



securing means on the front portion of said chassis between the front end of said membrane and the rear portion of said chassis for securing the membrane to the chassis;

said securing means including a stress-tensioning means connected between the front part of said membrane and the rear portion of said chassis to apply a tensile stress to the front of said membrane whereby after said membrane is inserted into said chassis with the bolt of the dihedron in proper relation to said air gap and motor, said stress tensioning means lies along the plane of symmetry extending through the vertex of the dihedron through to the back portion of said chassis and the tensile stress provides membrane vibrations in the form of bending transverse waves having the velocity V_m, said tensile stress applying means also preventing reflection of sound waves from the back end of the membrane.

4,395,599

DRIVING POINT IMPEDANCE DERIVED FROM A TRANSFER IMPEDANCE

Harold Seidel, Warren, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 28, 1980, Ser. No. 211,355
Int. Cl.³ H04B *1/58*
U.S. Cl. 179—170 NC **11 Claims**

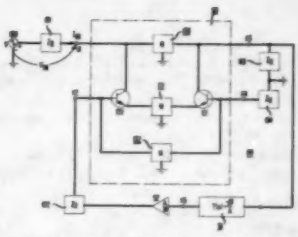
1. Circuitry including a directional coupler (90) comprising two active members (120,121) each having an emitting element, a control element and a collecting element, and

first, second and third two-port networks (130–132) connected, respectively, between said emitting element, said control element and said collecting element of said members, said networks arranged so that the symmetric mode transfer gain and the antisymmetric mode transfer gain measured between said control elements and said collecting elements, are equal,

CHARACTERIZED BY

circuit means (91,92,102), external to said coupler, comprising a transfer signal circuit (91,92) having a transfer ratio of $-\beta$ for coupling said collecting element of one of said members to said control element of the other of said members, and

impedance networks, each designated Z_R, terminating each said collecting element and each said control element,



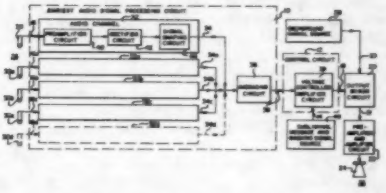
said circuitry providing a driving point impedance between said collecting element of said other of said members and the circuitry reference point in the form $Z_{in}=(1+\beta)Z_R/(1-\beta)$ whenever $\beta=(Z_{in}-Z_R)/(Z_{in}+Z_R)$.

4,395,600

AUDITORY SUBLIMINAL MESSAGE SYSTEM AND METHOD

Rene R. Lundy, 3016 SE. 39th, and David L. Tyler, 2939 SE. Taylor, both of Portland, Oreg. 97214

Filed Nov. 26, 1980, Ser. No. 210,645
Int. Cl.³ H04M *15/00*; H04K *1/02*
U.S. Cl. 179—1.5 M **29 Claims**



19. An auditory subliminal message system for an area comprising:

at least one audio sensor means for sensing ambient audio signals in the area and for producing an ambient audio output signal representing the amplitude of the sensed ambient audio signals;

subliminal message source means for providing an auditory subliminal message output signal;

masking signal source means for providing and combining a masking signal having frequency characteristics and an amplitude such that when the masking signal is combined with the amplitude adjusted subliminal message output signal it renders the adjusted subliminal message output signal outside of the conscious recognition range;

ambient audio signal processing circuit means coupled to the output of said audio sensor means for producing a control signal which varies with variations in the amplitude of the sensed ambient audio signals;

amplitude control circuit means coupled to said subliminal message source means, to said masking signal source means and to said ambient audio signal processing circuit means for controlling the amplitude of said auditory subliminal message and the amplitude of said masking signal in response to the control signal from said ambient audio signal processing circuit means such that the amplitudes of

said auditory subliminal signal and of said masking signal increase with increasing amplitudes of the sensed ambient audio signals and decrease with decreasing amplitudes of the sensed ambient audio signals; and

output circuit means including speaker means for transmitting the amplitude controlled auditory subliminal message output signal and the amplitude controlled masking signal to the area.

4,395,601

MODULAR HEARING AID

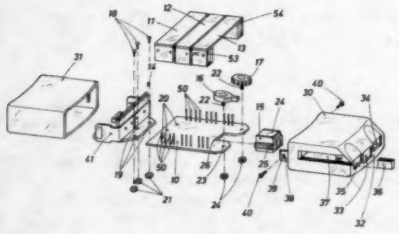
Wolfgang Köpke; Manfred Müller; Wolfgang Schmidt; Albert Eggert; Erwin Gahleitner, and Gerhard Raupach, all of Berlin, Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 30, 1980, Ser. No. 192,256

Claims priority, application Fed. Rep. of Germany, Oct. 17, 1979, 2941951

Int. Cl.³ H04R *25/04*; H05K *1/00*

U.S. Cl. 179—179 **8 Claims**



1. A hearing aid comprising in combination

(a) a circuit board having conductor strips thereon, a first side and an opposite second side and an edge zone along said first side; said second side including a cutout bounded by border edges;

(b) first plug-in elements mounted on said circuit board externally of said edge zone and being electrically connected to selective conductor strips;

(c) a plurality of circuit board-supported modular structural units;

(d) second plug-in elements mounted on each said circuit board-supported modular structural unit; said first plug-in elements cooperating with respective second plug-in elements for securing selected said circuit board-supported modular structural units on said circuit board;

(e) a battery holder mounted on said edge zone for receiving a battery for the hearing aid; and

(f) a microphone unit having opposite side faces and means defining a groove on each said side face; said microphone unit being received in said cutout and supported by said circuit board by an interengagement between each said groove and a respective said border edge.

4,395,602

ISOLATION SHIELD FOR CIRCUIT BREAKER COMPARTMENT SECONDARY DISCONNECTS

Roger N. Castonguay, Terryville, Conn., assignor to General Electric Company

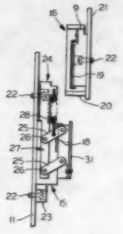
Filed Feb. 16, 1982, Ser. No. 349,333

Int. Cl.³ H01H *9/00*

U.S. Cl. 200—50 AA **9 Claims**

1. An insolation shield assembly in combination with circuit breaker compartment secondary disconnects within a circuit breaker compartment which contains a primary and a secondary source of current comprising:

an electrically insulating shield in superposed relation to a plurality of circuit breaker compartment secondary disconnect terminals connnected with said secondary current source for isolating said compartment terminals when a circuit breaker is removed from said compartment; and means for moving said shield out of superposed relation to said compartment terminals for exposing said compartment terminals to a corresponding plurality of secondary disconnect terminals on said circuit breaker and for connecting said circuit breaker terminals when said circuit breaker is inserted within said compartment.



4,395,603

REAR "STOP" LIGHT CONTACTOR FOR A VEHICLE SUCH AS A MOTORCYCLE OR MOTOR BICYCLE

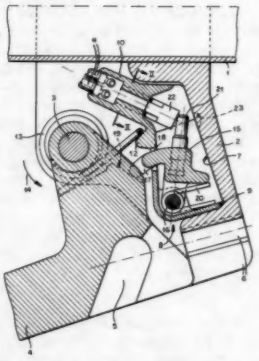
Rene Lauzier, Ruy, France, assignor to Angenieux-Clb S.A., Saint-Etienne, France

Filed Oct. 14, 1981, Ser. No. 311,453

Claims priority, application France, Oct. 14, 1980, 80 22198

Int. Cl.³ H01H *9/06*

U.S. Cl. 200—61.87 **4 Claims**



1. A brake actuator and contactor assembly for a brake light energized upon brake actuation, comprising:

a support;

a brake lever pivotally mounted on said support, said support having a recess opened toward said lever; and

a contactor at least partly received in said recess, said contactor comprising:

a hollow body formed with at least one stationary contact within said body,

a rocker pivotally mounted in said body in a portion thereof extending into said recess and having a formation projecting from said body through an opening formed therein and engageable with said lever,

a spring in said body urging said rocker toward said lever, and

a movable contact on said rocker engageable with said stationary contact to energize the brake light upon

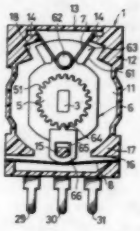
actuation of said rocker by said spring to cause said formation to follow said lever.

4,395,604

PULSE SWITCH

Shinobu Tominaga, Miyagi, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Filed Jun. 18, 1981, Ser. No. 275,123
Claims priority, application Japan, Jun. 18, 1980, 55-85353[U]
Int. Cl.³ H01H *19/24, 5/16*
U.S. Cl. 200—74 **10 Claims**



1. A switch capable of producing a plurality of pulses during rotation of an operation shaft of said switch, comprising:

a toothed gear wheel connected to said shaft for rotation therewith and having a plurality of spaced teeth defining valley portions therebetween on the periphery of said gear;

an operation member disposed over said gear and adapted to rotate independently of said gear, said operation member having a cam portion formed integrally therewith and adapted to fit within said valley portions, said operation member further carrying a slidable contact having a contact portion on respective end portions of said operation member with one of said contact portions adapted to engage a common stationary contact of said switch and the other of said contact portions being movable between a first state out of engagement with at least one other stationary contact of said switch and a second state into engagement with said at least on other stationary contact upon rotation of said operation member;

means for supporting said operation member for rotation about an axis near said one contact; and

pulse means connected with said operation member for normally holding it in one of said states and, upon rotation of said operation shaft, moving it between said two states each time said cam portion is moved into and out of engagement with respective valley portions.

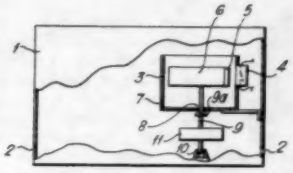
4,395,605

FLOAT OPERATED REED SWITCHES

William A. Weston, "The Barn", Portkil Bay, Kilcreggan, Helensburgh, Dunbartonshire, Scotland

Continuation of Ser. No. 136,756, Apr. 3, 1980, abandoned. This application Mar. 5, 1982, Ser. No. 355,168
Claims priority, application United Kingdom, Apr. 5, 1979, 7912014
Int. Cl.³ H01H *35/18*
U.S. Cl. 200—84 C **3 Claims**

1. A switch device responsive to the level of liquid in a vessel, comprising a reed switch, a first float, a magnet carried by said first float for activating said reed switch in accordance with the level of the first float and magnet relative to the reed switch; a second float vertically spaced from the first float, a container within said vessel, wherein the first float is located within the container and into which container liquid contained in the vessel can flow to a first predetermined level at which the switch is required to be activated and from which container liquid can flow when the level of the liquid falls to a second predetermined level; and in which the second float is secured to an upstanding rod which has an end portion for projecting slideably into the container to a predetermined limit; the arrangement being such that when the liquid level in the vessel rises, the liquid raises the second float so that the rod also rises and raises the first float, but not sufficiently to cause the reed switch to be activated; and upon a further predetermined rise in the level of the liquid, the liquid enters the container and raises the first float to a level at which the reed switch is activated; and upon lowering of the level of the liquid, the liquid flows out of the container, but the first float is held by the rod against movement, until the level of the liquid in the vessel lowers sufficiently to allow the second float and rod to lower to a level to free the first float allowing the first float to lower so that the reed switch is deactivated thereby extending the differential between the levels at which the switch is activated and de-activated.

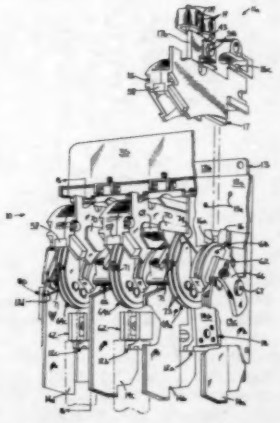


4,395,606

DISCONNECT SWITCH WITH LINE-SIDE CONTACT MODULE

Albert A. Zaffrann, Milwaukee; Robert E. Borchardt, Brown Deer, and Grant W. Nelson, Milwaukee, all of Wis., assignors to Allen-Bradley Company, Milwaukee, Wis.

Filed Mar. 11, 1981, Ser. No. 242,429
Int. Cl.³ H01H *9/30, 33/04*
U.S. Cl. 200—144 R **4 Claims**



1. A disconnect switch of a type having a frame with a back support and with two upright spaced sidewalls extending forward from said back support to define at least one compartment, having a crossbar disposed across said compartment with arms at opposite ends that extend inwardly along respective sidewalls to respective pivotal connections, having a load-side stationary contact and a line-side stationary contact that are vertically spaced apart, and having a movable contact

blade carried on said crossbar in continuous sliding contact with said load-side stationary contact and for sliding engagement with said line-side stationary contact as said crossbar is pivoted from an open position to a closed position, wherein the improvement comprises:

a load-side contact module with an insulating base mounted to a lower portion of said back support and with a conductor on said insulating base that forms said load-side stationary contact; and

a line-side contact module with a housing of insulating material that is removably mounted from its front side to an upper portion of said back support above the insulating base of said load-side contact module, said housing having an insulating base portion and having an arc chute hood portion projecting forward from said insulating base portion and defining a downwardly opening cavity, said line-side contact module also having a bar-shaped conductor mounted on its insulating base portion in an upright position generally perpendicular to said back support, said bar-shaped conductor extending downwardly into said cavity to provide said load-side stationary contact, and said bar-shaped conductor extending upwardly through said arc chute hood and forward of said insulating base to provice a terminal portion.

4,395,607

GAS BLAST SWITCH

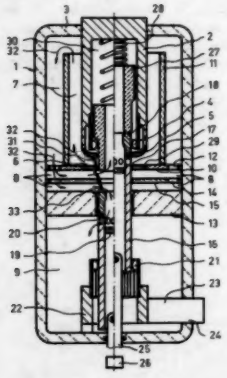
Adrian W. Roth, Aarau, Switzerland, assignor to Sprecher & Schuh AG, Aarau, Switzerland

Filed Aug. 31, 1981, Ser. No. 298,045

Claims priority, application Switzerland, Sep. 1, 1980, 6564/80

Int. Cl.³ H01H *33/72*

U.S. Cl. 200—148 R **5 Claims**



1. Gas blast switch with a resting contact piece and a rodlike movable contact piece which can be axially engaged with the resting contact piece, and with a housing, the interior of which is divided into

an arcing enclosure which extends between a consumable electrode situated in front of the resting contact piece and a separation wall fitted into the housing, remote from said consumable electrode in the switching-off direction and having an aperture for the passage of the movable contact piece,

a quenching enclosure which extends between said separation wall and an intermediate partition fitted into the housing on the far side of said separation wall, again as seen in the switching-off direction, and

an expansion enclosure, which lies on the side of the partition opposite to the quenching enclosure to which it becomes connected by a gas-path through a channel which is freed from the movable contact piece during the switching movement,

where the arcing enclosure and the quenching enclosure are connected by way of a storage enclosure which has a larger capacity than the arcing enclosure and exhibits at least one flow-diverter, characterized in that the resting contact piece cooperates with an insulating follower piston which it surrounds, and which is urged into its resting position by the action of the movable contact piece and against the force of a spring during the switching-on movement, and where during the switching-off movement the follower piston will follow the movable contact piece until it leaves the partitioning wall, and will thereafter close the aperture of the same, which aperture lies between the arcing enclosure and the quenching enclosure, and where the border zones of the partitioning wall aperture facing the arcing enclosure and the quenching enclosure, respectively, are electrically connected.

4,395,608

SAFETY SWITCH ASSEMBLIES

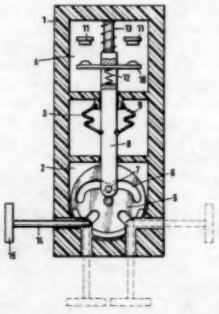
Karl-Georg Eicker, Remscheid; Siegfried Schulz, Hückeswagen, and Burkhart Seim, Radevormwald, all of Fed. Rep. of Germany, assignors to K. A. Schmersal GmbH & Co., Wuppertal, Fed. Rep. of Germany

Filed Jan. 13, 1982, Ser. No. 339,175

Claims priority, application Fed. Rep. of Germany, Jan. 14, 1981, 3100862

Int. Cl.³ H01H *21/84*

U.S. Cl. 200—153 L **15 Claims**



9. An electrical switch comprising:

housing means, said housing means defining three serially arranged chambers;

a slide member movably supported in said housing means and extending into all three chambers;

at least a first stationary electrical contact positioned in a first of said housing means chambers;

a movable electrical contact mounted on said slide member and located in said first chamber for cooperation with said stationary contact;

means located in the intermediate of said chambers for establishing a flexible seal between said slide member and said housing means whereby said first chamber is rendered hermetic;

cam means supported for rotation in the third of said housing means chambers;

a cam follower affixed to said slide member and cooperating with said cam means whereby rotation of said cam means will impart longitudinal movement to said slide member to establish relative motion between said stationary and movable contacts whereby said switch may be selectively opened and closed; and

actuator means, said actuator means in part extending into

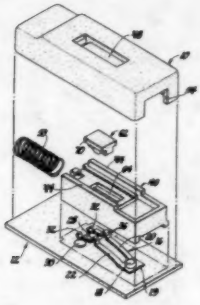
said housing means third chamber and imparting rotation to said cam means.

4,395,609

CAM OPERATED DUAL SWITCH ASSEMBLY

Thomas R. Sowash, Anderson, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Jul. 24, 1981, Ser. No. 286,454
Int. Cl.³ H01H 13/66
U.S. Cl. 200—153 LA 4 Claims



1. A switch assembly having two switches alternately operated by a reciprocable actuator comprising

first and second cam operated switches, each switch being actuable between open and closed states,

a reciprocable actuator for sequentially changing the state of the first switch and then the state of the second switch upon movement in one direction and for sequentially changing the state of the first switch and then the state of the second switch upon movement in the return direction, and

the actuator having a first cam fixed thereto for movement therewith for operating the first switch and a second cam for operating the second switch, the second cam slidably supported by the actuator between first and second limits so as to form a lost motion connection between the actuator and the second cam, the second cam being shifted relative to the second switch for switch operation by engagement with the first limit during actuator movement in one direction and being shifted again relative to the second switch for switch operation by engagement with the second limit during actuator movement in the other direction, the switches being so positioned relative to the cams that upon movement of the actuator in either direction the cams operate their respective switches in the same order.

4,395,610

PIVOTABLE MULTIPOLE SWITCH

Robert F. Downs, Santa Ana, and Salvadore C. Santillan, Whittier, both of Calif., assignors to Technology Management, Inc., Santa Ana, Calif.

Filed Jul. 20, 1981, Ser. No. 287,942
Int. Cl.³ H01H 21/54
U.S. Cl. 200—292 20 Claims

1. An electrical switch for connecting and disconnecting a plurality of isolated electrical conductors comprising:

(a) an insulating base panel,

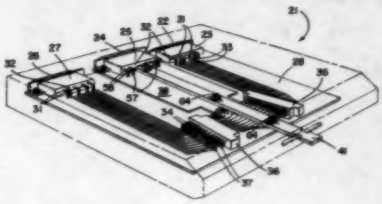
(b) a thin substantially flat insulating sheet,

(c) means for pivotably supporting said sheet on said base panel,

(d) a plurality of parallel planar conductors mounted substantially flush with at least one side of said sheet and extending to at least one edge of said sheet,

(e) at least one connector mounted on said base panel and having an array of parallel elastically deformable conductors forcibly engageable with the parallel planar conductors on said sheet,

(f) means for forcibly engaging and disengaging said sheet with said connector,



(g) means for making electrical connections to said parallel planar conductors, and

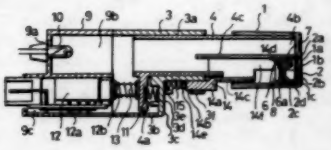
(h) means for making electrical connections to said elastically deformable conductors.

4,395,611

ILLUMINATED PUSH-BUTTON SWITCH

Shiro Kondo, and Yasuo Takii, both of Furukawa, Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan

Filed Sep. 24, 1981, Ser. No. 305,197
Claims priority, application Japan, Sep. 25, 1980, 55-133307; Oct. 24, 1980, 55-151987[U]
Int. Cl.³ H01H 9/16
U.S. Cl. 200—314 4 Claims



1. An illuminated push-button switch, comprising

a housing member receiving a switch actuated by axial movement of an operation portion;

a push-button member disposed slidably within said housing member and having an arm portion engaging said operation portion of said switch for actuation thereof during movement of said push-button within said housing member;

a light source mounted within said housing member;

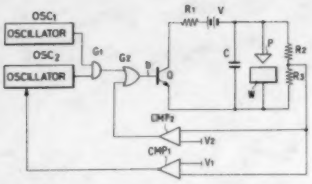
said push-button member having at its outer end portion a display formed by a plurality of illuminable display elements; and

shutter means including a rotatable plate member movable from a position blocking light from one of said display elements during depression of said push-button member to actuate said switch, said shutter means including a tongue portion carried by said push-button member, an opaque plate member, and means including an arm mounted slidably to said push button-member for carrying said shutter means.

4,395,612
POWER SOURCE CIRCUIT FOR ELECTRIC DISCHARGE MACHINE

Syunzo Izumiya, Hachioji, Japan, assignor to Fujitsu Fanuc Limited, Tokyo, Japan

Filed Feb. 11, 1981, Ser. No. 233,501
Claims priority, application Japan, Feb. 16, 1980, 55-18049
Int. Cl.³ B23P *1/02*
U.S. Cl. 219—69 P **7 Claims**



1. An improved power source for electric discharge machines of the type wherein a first digital oscillator drives a switching element in the charging circuit of a capacitor which repeatedly produces machining discharges through a gap between an electrode and a workpiece in order to machine the workpiece, the machining discharges occurring at a first voltage which is higher than the breakdown voltage of the gap following a machining discharge, wherein the improvement comprises:

first means for detecting the voltage across the gap;

second means responsive to the first means for turning the switching element OFF at least once, for a duration longer than that determined by the first oscillator, before the gap voltage has risen to a second voltage following a machining discharge, the second voltage being higher than the breakdown voltage of the gap following a machining discharge but lower than the first voltage at which a machining discharge occurs, said second means including a second digital oscillator having a frequency lower than the first digital oscillator, a first gate having a first input responsive to the output of the first oscillator and a second input responsive to the output of the second oscillator, and third means for communicating the output of the first gate to the switching element; and

additional means for keeping the switching element ON, following a machining discharge, as the gap voltage rises from a level above the breakdown voltage of the gap following a machining discharge to the first voltage at which a machining discharge occurs.

4,395,613
UNIVERSAL ELECTRODE HOLDER

James L. Barr, and Donald R. Johnson, both of Jamestown, N.Y., assignors to Barr Mold & Die, Inc., Ashville, N.Y.

Filed May 12, 1981, Ser. No. 260,087
Int. Cl.³ B23K *9/28;* **B23P** *1/04*
U.S. Cl. 219—69 E **22 Claims**

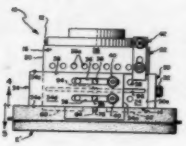
1. An electrode holder, comprising:

a holder body having at least one sidewall stepped to define vertically disposed upper and lower surface portions connected by a horizontally disposed connecting surface portion;

reference means mounted on said holder body and having a reference surface arranged to extend transversely of said lower and connecting surface portions relatively adjacent one end thereof;

indexing means having an indexing surface, said indexing means being mounted on said holder body in surface engagement with said lower and connecting surface portions and for sliding movements lengthwise thereof to selectively vary the distance between said reference and indexing surfaces;

clamping means mounted on said holder body for clamping an electrode of rectangular cross-section in a mounted position, wherein opposite edge surfaces of said electrode engage with said reference and indexing surfaces, rear side



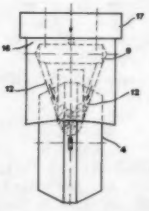
and upper surfaces of said electrode engage with said lower and connection surfaces and a front side surface of said electrode engages with said clamping means; and

conduit means defined by said holder body and by cooperation of said lower surface portion and said indexing means for supplying fluid to said electrode when in said mounted position.

4,395,614
APPARATUS TO SUPPRESS OXIDATION DURING RESISTANCE WELDING

Wolfgang Weil, Heitersheim, Fed. Rep. of Germany; Andres Lanz, Mutschellen, Switzerland; Max Vogt, Singapore, Singapore; Paul Meier, Widen, Switzerland; Martin Kaul, Bellikon, Switzerland, and Hanspeter Fankhauser, Irvington, N.Y., assignors to Paul Opprecht, Bergdietikon, Switzerland

Filed Dec. 3, 1980, Ser. No. 212,593
Claims priority, application Switzerland, Dec. 19, 1979, 11286/79
Int. Cl.³ B23K *35/38*
U.S. Cl. 219—72 **1 Claim**



1. In a resistance roller welding machine for seam welding two can components movable in a predetermined direction, including oxidation suppression means operable for at least partially suppressing oxidation of the hot welding seam,

the improvement comprising

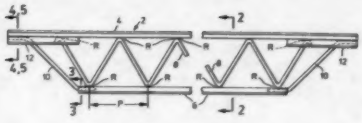
gas supply means forming part of said oxidation suppression means having an opening operative for discharging an agitated inert gas therethrough to a location downstream of and near said welding seam, as seen along said predetermined direction, and

an expansion chamber for agitating and cooling said inert gas prior to discharging it through said opening.

4,395,615
APPARATUS FOR WELDING METAL TRUSSES

Joseph M. Tanenbaum, 4 Dewbourne Ave., Toronto, Ontario, Canada M5P 1Z2

Division of Ser. No. 179,634, Aug. 20, 1980, abandoned. This application Jul. 21, 1981, Ser. No. 285,496
Claims priority, application Canada, Aug. 15, 1980, 358388
Int. Cl.³ B23K 11/32
U.S. Cl. 219—79 4 Claims



1. Apparatus for fabricating an open web metal truss derived from substantially uniformly spaced-apart chord members of selected suitable configuration joined by electrical resistance welding to a web member of a substantially uniformly undulating selected suitable configuration along substantially uniformly separated regions of contact established by the apices of said undulating web member, and wherein the cross-section of the web member at the regions of contact exceed the cross-sections of the respective chord members including,

(a) means for forming chord members from lengths of metal stripping into a selected suitable configuration;

(b) means for forming web members from lengths of metal wires into a selected suitable configuration;

(c) treating means for removing scale and surface coatings from each chord and web member so formed;

(d) means for assembling treated chord and web members into truss defining relation and supporting same in such disposition;

(e) means for delivering such assembled and supported chord and web members in truss defining relation along a linear path to a welding station;

(f) at least four electrical resistance welding means located at said welding station in spaced relation to said linear path and to each other, each said welding means including opposed first and second electrode means of selected unequal resistance, each said welding means being operable to simultaneously grip, weld and release such assembled and supported chord members and web members in truss defining relation at one of four juxtaposed regions of contact therebetween, the electrode of higher resistance of each said welding means being disposed so as to contact the chord member and the electrode of lower resistance being disposed so as to contact the web member;

(g) means for supplying said electrode means while in gripping contact with the chords and web member respectively with a series of time controlled intermittent impulse of heat generating electrical energy sufficient to incrementally raise the members to fusion temperature along the regions of contact; and,

(h) means for indexing said delivery means such that at least four juxtaposed regions of contact between the chord members and web member are successively presented to said welding means.

4,395,616
CONTINUOUS-WAVE PLASMA-ASSISTED RADIATION TREATMENT OF REFLECTIVE SOLIDS

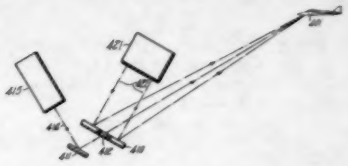
David C. Smith, and Russell G. Meyerand, Jr., both of Glastonbury, Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 17, 1980, Ser. No. 217,475
Int. Cl.³ B23K 27/00
U.S. Cl. 219—121 L 3 Claims

1. An apparatus for irradiating a moving target having a surface exposed to the atmosphere comprising:

guiding means for tracking said target and for directing optical radiation through the atmosphere at said target along a nonconductive optical path;

laser means, transmitting laser radiation through said guiding means, for igniting a plasma adjacent a portion of said

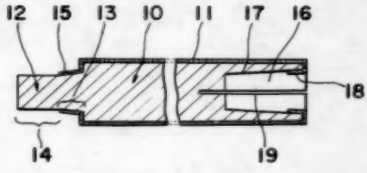


surface, said laser means further comprising a continuous-wave laser for maintaining said plasma, said plasma being confined adjacent said surface by the motion of said target relative to the atmosphere which motion maintains said nonconductive optical path in a nonconductive state.

4,395,617
SUCCESSIVELY JOINABLE CARBON ELECTRODE FOR GOUGING METALS

Masanori Maeda, Katano; Koji Ishihara, and Yoshio Kino, both of Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 17, 1981, Ser. No. 255,264
Claims priority, application Japan, Apr. 18, 1980, 55-53833
Int. Cl.³ B23K 35/04
U.S. Cl. 219—145.1 5 Claims



1. A successively joinable carbon electrode for gouging metallic articles, which comprises:

an elongated electrode body coated on its outer periphery with a copper layer;

a connecting projection formed at and integral with one end of the electrode body and protruding coaxially outwardly therefrom, said projection consisting of a continuous combination of a frustoconical stem portion adjacent and continuous to the electrode body and a cylindrical portion continuous to and on one side of the stem portion opposite to the electrode body, said stem portion being coated on its periphery with a copper layer which is continuous to the copper layer on the electrode body;

said electrode body having a socket defined therein and extending from the other end thereof in a direction coaxially inwardly thereof in a tapered fashion, a wall defining the socket having an annular portion adjacent the opening of said socket coated with a copper layer which is continuous to the copper layer on the electrode body; and

said electrode body also having a split cut from said other end of the electrode body in a direction inwardly thereof over a distance larger than the depth of the socket whereby, when the carbon electrodes of identical construction are coaxially connected together with the connecting projection of one carbon electrode inserted into the socket of the other carbon electrode, the free end of the projection tightly contacts the wall defining the socket

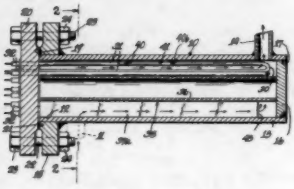
and the copper layer on the stem portion contacts the copper layer on said annular portion of the wall defining the socket.

4,395,618

ELECTRIC CIRCULATION HEATER FOR HEATING FLUIDS SUCH AS OIL

Donald M. Cunningham, Pittsburgh, Pa., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Mar. 3, 1980, Ser. No. 126,673
Int. Cl.[3] H05B *3/82*; F24H *1/10*; F28F *9/22*
U.S. Cl. 219—298 4 Claims



1. A circulation heater for heating a fluid, comprising:

an imperforate tubular body having one end closed and the other end open,

a head connected to said body to close and seal said open end,

a baffle member longitudinally within said body and extending from the inner surface of said closed end to the inner surface of said head, said baffle member having a plurality of radially-extending vanes engaging the interior surface of said body and establishing therewith a plurality of separated longitudinaly extending chambers of equal transverse cross sectional area,

a plurality of elongated metal-sheathed electric heating elements carried by said head, said heating elements being of equal transverse cross section and having their terminal portions extending in sealed relation through openings in said head, said heating elements being disposed longitudinally within said chambers,

said body having an inlet for fluid to be heated and an outlet for the exhaust of the heated fluid, said inlet communicating with one body chamber and said outlet communicating with another body chamber,

said vanes being ported to establish fluid flow from said inlet, serially through said chambers and outwardly of said outlet,

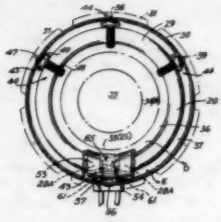
a certain number of said heating elements being disposed longitudinally within a certain of said body chambers and a different number of said heating elements being disposed in a certain other of said body chambers, whereby the effective transverse cross sectional area of the flow-through space in said certain and said certain other of said body chambers is different to accordingly cause variation of the velocity of the fluid flowing through such chambers.

4,395,619

HAND HELD HAIR DRYER WITH SHOCK MOUNTED QUARTZ TUBE HEATER

Hiroshi Harigai, Tokyo, Japan, assignor to Yamada Electric Industries, Co. Ltd., Chiba, Japan

Filed May 6, 1981, Ser. No. 260,603
Int. Cl.[3] F24H *3/00*; H05B *1/00*
U.S. Cl. 219—377 9 Claims



2. In a hair dryer including a housing defining air inlet and outlet means, an electric motor mounted in said housing, a fan driven by said motor for creating an air flow through said housing from said inlet to said outlet, a heater assembly mounted in said housing, a reflector secured in said housing, and circuit means for operating said motor and heater assembly, the improvement wherein said heater assembly comprises: a quartz glass heating tube for providing a radiant heat source, said tube having a generally annular shape about a central axis therethrough thereby defining axial and radial directions, the tube having opposite ends adjacent but circumferentially spaced apart, said tube being situated in said housing axially intermediate said inlet and outlet means at least partially in the path of said air flow, and support means for securing said tube to said housing intermediate said reflector and outlet means comprising a primary support engaging said ends of said quartz tube and at least two secondary supports, the location of the primary support with respect to the clock face reference being at 6 o'clock and the locations of said secondary supports being at approximately 10 and 2 o'clock respectively, each of said supports having a first part at least partially encircling and resiliently holding the tube and a second part mounted in said housing, each of said supports permitting at least a small amount of motion of said tube in said axial direction relative to said housing, said supports also providing resilient cushioning support for said tube in said radial direction.

4,395,620

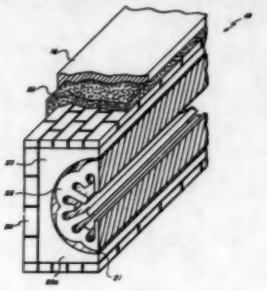
ELECTRIC STORAGE HEATING APPARATUS

Robert A. Clyde, and William B. Crandall, both of Ashville Ter. Apt. 43, Ashville, N.C. 28805

Filed Feb. 23, 1981, Ser. No. 237,573
Int. Cl.[3] F24H *7/00*; H05B *3/00*
U.S. Cl. 219—378 18 Claims

1. In an electric heat storage apparatus having (1) an electric heating element, (2) a heat storage core, (3) an air passageway in communication with the core, and (4) thermostatically controlled air circulation means, the improvement wherein said heat storage core comprises a ceramic pipe having a scallop-

shaped outer surface providing a plurality of crests and troughs and a series of parallel grooves cut in at least some of the crests,



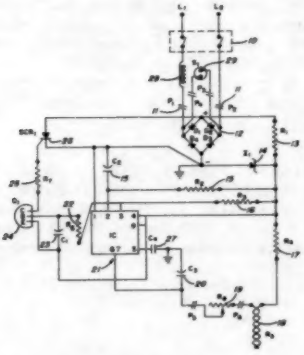
and said heating element is located in said grooves in contact with said pipe.

4,395,621

TIMING CONTROL APPARATUS AND CIRCUIT

Randall W. Parker, 3165 Oser Rd., Norton, Ohio 44203

Filed Apr. 10, 1980, Ser. No. 127,334
Int. Cl.³ H05B 1/02
U.S. Cl. 219—492 **6 Claims**



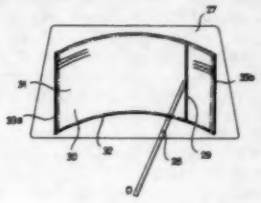
1. An electric toaster comprising:
(A) a frame;
(B) at least one spring loaded rack for reception of bread to be toasted and being movable from an unloaded position to a loaded position against the force of a spring;
(C) a solid state control mounted on said frame and including
(1) means for mechanically engaging said rack and holding said rack in loaded position including a normally inert AC solenoid with a spring loaded plunger normally urged to an extended position and movable to a retracted position upon activation of said timing means,
(2) sensing and heat compensating means disposed on said frame,
(3) timing means connected to said sensing and heat compensating means and adapted to release said means for mechanically holding said rack in loaded position upon attainment of a predetermined heat build up, and
(4) trigger circuit means carried by said solid state control for recycling said timing means in response to failure of said means for holding said rack in loaded position.

4,395,622

TRANSPARENT HEATING PANE

Maurice Dran, Paris, and Bernard Jamet, Sully sur Loire, both of France, assignors to Saint Gobain Vitrage, Courbevoie, France

Filed Jan. 7, 1981, Ser. No. 223,107
Claims priority, application France, Jan. 8, 1980, 80 00278
Int. Cl.³ H05B 3/06
U.S. Cl. 219—522 **4 Claims**



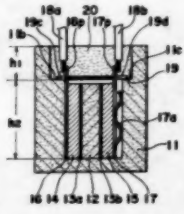
1. A laminated glass pane comprising a transparent thermoplastic layer interposed between two glass plates including a heating network of fine metallic wires inlaid in said thermoplastic layer between two collector strips, characterized in that the metallic wires have a diameter of approximately 15 μm to be substantially invisible to the naked eye, are undulated along directrices forming arcs of circles are separated from each other and do not impair vision through the laminated glass pane.

4,395,623

SELF-REGULATING ELECTRIC HEATER

Misoru Shimada, and Kiyofumi Torii, both of Yokaichi, Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Mar. 2, 1981, Ser. No. 239,682
Claims priority, application Japan, Mar. 4, 1980, 55/28455[U]; Mar. 4, 1980, 55/28456[U]
Int. Cl.³ H05B 3/02
U.S. Cl. 219—544 **7 Claims**



1. A self-regulating electric heater, comprising:
(A) a casing made of electrically non-conductive and thermally high conductive ceramic, said casing having a cylindrical outer configuration and a chamber formed therein, said chamber having a rectangular cross-section and being opened at one end of the cylindrical casing and closed at the other end opposing the open end;
(B) a heating unit housed in said casing in such a manner as to establish a thermal contact with said casing, said heating unit comprising:
(1) a PTC body for generating heat when an electric current is supplied therethrough, said PTC body having first and second substantially parallel planar surfaces spaced from one another, said first and second surfaces having first and second generally planar electrodes,

respectively, located thereon for forming ohmic contact surfaces;

(2) first and second heat dissipating plates each made primarily of brass and having first and second flat surfaces, said first and second heat dissipating plates sandwiching said PTC body such that said first flat surfaces of said first heat dissipating plate is flush with said first electrode and said first flat surface of said second heat dissipating plate is flush with said second electrode; and

(3) first and second terminal plates sandwiching the combination of said PTC body and said heat dissipating plates such that said first terminal plate is in electrical contact with said second flat surface of said first heat dissipating plate and said second terminal plate is in electrical contact with said second flat surface of said second heat dissipating plate;

(C) a biasing means provided in said casing for biasing said heating unit to hold said heating unit in contact with an inner wall of said casing;

(D) a lid member formed of an electrically insulating material mounted on said casing for closing said open end of said chamber, said lid member having two removed sections for allowing said first and second terminal means to pass therethrough for the external electric connection; and

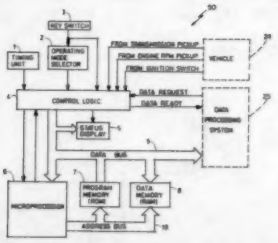
(E) a sealing member formed of an electrically insulated material deposited around said lid member for sealing said casing hermetically.

4,395,624

MOVING VEHICLE MONITORING SYSTEM

Heinz Wartski, Brookline, Mass., assignor to Fleet Tech, Inc., Watertown, Mass.

Filed Nov. 3, 1980, Ser. No. 203,329
Int. Cl.³ G01P *3/48*
U.S. Cl. 377—15 **17 Claims**



1. A system for recording data concerning machine operation, comprising:

a sensing means for generating machine pulses the number of which per a pre-selected timing period is related to the machine parameter or parameters to be measured,

selecting means for choosing a number of quanta, each selected quantum corresponding to a different pre-selected operational level or range of the machine, and at least some of which quanta corresponding to more than one number of machine pulses per said timing period,

means for counting the machine pulses for said pre-selected timing period and selecting the actual quantum into which the number of counted pulses falls,

means for comparing the actual quantum with some previous quantum or quanta, and

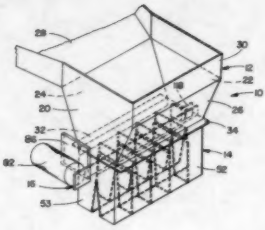
means for recording the actual quantum if the comparison of the actual quantum with the previous quantum or quanta indicates a non-uniform change in the machine parameter.

4,395,625

CONTAINER COUNTER

Donald W. Schutt, 2440 Orchard Ave., Holland, Mich. 49423

Filed Feb. 9, 1981, Ser. No. 232,736
Int. Cl.³ G06M *7/02*; B65G *27/00*
U.S. Cl. 235—98 C **16 Claims**



1. A container counter for counting elongated objects such as empty beverage cans, each of which has generally the same width and is longer than it is wide, comprising:

a hopper for receiving objects to be counted;

a plurality of generally vertical chutes located below said hopper for conveying objects out of said hopper, each of said chutes having an upper, open end communicating with said hopper and a lower, open end, each of said chutes shaped to permit objects to pass therethrough and to prohibit two objects from passing side-by-side therethrough;

means operably mounted between said hopper and said chutes for assisting in orienting said objects into a generally lengthwise, vertical position as said objects pass from said hopper into said chutes; and

counting means operably connected to said chutes for counting objects passing through said chutes.

4,395,626

GASOLINE STATION SYSTEM FOR ENABLEMENT OF SELECTED PUMPS BY A CREDIT CARD CONSOLE LOCATED AT THE PUMP ISLAND

Thomas H. Barker, South Holland, Ill., and Thomas L. Roach, Dyer, Ind., assignors to Atlantic Richfield Company, Philadelphia, Pa.

Filed Dec. 28, 1981, Ser. No. 334,630
Int. Cl.³ G07F *7/08*
U.S. Cl. 235—381 **7 Claims**

1. A system for use in a gasoline station, or the like, for automatic enablement of fuel dispensing means from the fuel island by a customer credit card, comprising:

a plurality of fuel dispensing means for dispensement of fuel, said plurality grouped to form at least one fuel island of the gas station, each said fuel dispensing means for generating first coded data signals representative of the fuel dispensed;

customer control means located at a fuel island, including:

i. credit card reader means operable for reading indicia

carried by a credit card and for generating card coded data indicative of said indicia;

ii. customer-operable keyboard means including key means for operator generation of keyboard data indicative of a selected one of said fuel dispensing means;

iii. display means responsive to display signals for visually displaying information for communicating with the customer;

iv. output channel means for transmitting and receiving control data signals away from and to said customer control means; and

v. first processor control means connected to said credit card reader means, said keyboard means, said display means and said output channel means, said processor control means being responsive to operation of said card reader means for transmitting control data signals carrying signals representing said card coded data via said output channel means and responsive to operation of said keyboard means for transmitting control data signals carrying signals representing said keyboard data via said output channel means and responsive to control data signals received via said output channel means for displaying visual information on said display means for instructing the customer's operation of said customer control means; and

attendant control means for use by the attendant of the gas station, said attendant control means being manually operable by the attendant for enabling a selected one of said fuel dispensing means, said attendant control means including:

i. data transmission means connectable to a data bank and capable of transmitting control data signals thereto and capable of receiving second coded data signals from the data bank representative of credit authorization, said second coded data signals having a valid credit state or a non-valid credit state;

ii. input channel means connected to said output channel means of said customer control means, for transmitting and receiving said control data signals from and to said customer control means;

iii. indicator means for indicating to the attendant the value of dispensed fuel of one of said dispensing means; and

iv. second processor control means connected to said fuel dispensing means, said data transmission means, said input channel means and said fuel indicator means, said processor control means responsive to certain of said control data signals received from said customer control means, for instructing said data transmission means to transmit credit card coded data to said data bank and responsive to said second coded data signals from the data bank for transmitting control data signals to said customer control means via said input channel means and responsive to certain of said control data signals from said customer control means for instructing enablement of a selected one of said fuel dispensing means and responsive to said first coded data signals for activating said indicator means, for providing an indication to the attendant of the value of dispensed fuel.

4,395,627

GASOLINE STATION SYSTEM FOR ENABLEMENT OF SELECTED PUMPS BY A CREDIT CARD CONSOLE LOCATED AT THE PUMP ISLAND

Thomas H. Barker, South Holland, Ill.; Thomas L. Roach, Dyer, Ind.; Richard H. Kruse, Deerfield, Ill.; Jay A. Fayer, Glenview, Ill., and Eric O. Bohlman, Wilmette, Ill., assignors to Atlantic Richfield Company, Philadelphia, Pa.

Filed Dec. 28, 1981, Ser. No. 334,692

Int. Cl.³ G07F 7/08

U.S. Cl. 235—381 **9 Claims**

1. A system for use in a gasoline station, or the like, for automatic enablement of fuel dispensing means from the fuel island by a customer credit card, comprising:

a plurality of fuel dispensing means for dispensement of fuel, said plurality grouped to form at least one fuel island of the gas station, each said fuel dispensing means for generating first coded data signals representative of the fuel dispensed;

customer control means located at a fuel island, including:

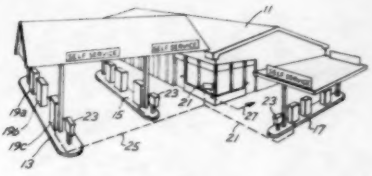
i. credit card reader means operable for reading indicia carried by a credit card and for generating card coded data indicative of said indicia;

ii. customer-operable keyboard means including key means for operator generation of keyboard data indicative of a selected one of said fuel dispensing means;

iii. display means responsive to display signals for visually displaying information for communicating with the customer;

iv. output channel means for transmitting and receiving control data signals away from and to said customer control means, said output channel means transmitting and receiving said data signals in a synchronous serial data protocol, said output channel means having a plurality of conductors for permitting transmissions of serial data signals in two directions,

v. first processor control means connected to said credit card reader means, said keyboard means, said display means and said output channel means, said processor control means being responsive to operation of said card reader means for transmitting control data signals carrying signals representing said card coded data via



said output channel means and responsive to operation of said keyboard means for transmitting control data signals carrying signals representing said keyboard data via said output channel means and responsive to control data signals received via said output channel means for displaying visual information on said display means for instructing the customer's operation of said customer control means; and

attendant control means for use by the attendant of the gas station, said attendant control means being manually operable by the attendant for enabling a selected one of said fuel dispensing means, said attendant control means including:

i. data transmission means connectable to a data bank and capable of transmitting control data signals thereto and capable of receiving second coded data signals from the data bank representative of credit authorization, said second coded data signals having a valid credit state or a non-valid credit state;

ii. input channel means connected to said output channel means of said customer control means, for transmitting and receiving said control data signals from and to said customer control means said input channel means transmitting and receiving said data signals in a synchronous serial data protocol, said input channel means having a plurality of conductors for permitting transmission of serial data signals in two directions;

iii. indicator means for indicating to the attendant the value of dispensed fuel of one of said dispensing means; and

iv. second processor control means connected to said fuel

dispensing means, said data transmission means, said input channel means and said fuel indicator means, said processor control means responsive to certain of said control data signals received from said customer control means, for instructing said data transmission means to transmit credit card coded data to said data bank and responsive to said second coded data signals from the data bank for transmitting control data signals to said customer control means via said input channel means and responsive to certain of said control data signals from said customer control means for instructing enablement of a selected one of said fuel dispensing means and responsive to said first coded data signals for activating said indicator means, for providing an indication to the attendant of the value of dispensed fuel.

4,395,628

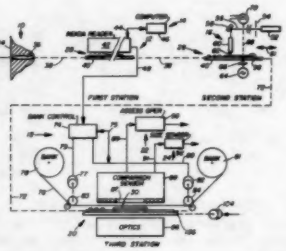
ACCESS SECURITY CONTROL

Daniel Silverman, 5969 S. Birmingham Ave., Tulsa, Okla. 74105, and Everett A. Johnson, 15 S. Prospect Ave., Park Ridge, Ill. 60068

Division of Ser. No. 32,404, Apr. 23, 1979, which is a continuation-in-part of Ser. No. 752,912, Dec. 21, 1976, Pat. No. 4,150,781, which is a continuation-in-part of Ser. No. 495,632, Aug. 8, 1974, Pat. No. 3,999,042, which is a continuation-in-part of Ser. No. 272,739, Jul. 18, 1972, Pat. No. 3,829,661, which is a continuation-in-part of Ser. No. 74,066, Sep. 21, 1970, Pat. No. 3,677,465. This application Feb. 12, 1981, Ser. No. 233,885

Int. Cl.³ G06K *5/00*

U.S. Cl. 235—382 **8 Claims**



1. A system for access control, for selectively granting access on presentation and authentication of a control token, said system comprising

A. storage means for a plurality of unique authenticating master coded bit patterns, each in different address locations; a plurality of such address locations in said storage means, each address being an index of a corresponding coded pattern stored therein;

B. a plurality of control tokens, each control token comprising an unique object; means on said object for storing in machine readable form an index to one of said coded bit patterns; means on said object for storing in machine readable and writeable form an unique bit pattern comprising an alterable memory access means; each of said control tokens having one of said address locations thereon to index the corresponding stored authenticating master coded bit pattern;

C. reading means to which such a control token can be presented, said reading means including means to read said index and to read said coded bit pattern on said token;

D. means responsive to said reading means to select from said storage means said coded bit pattern corresponding to said index; and

E. means to compare the unique bit pattern read from said token with the stored bit pattern in said storage means corresponding to the read index.

4,395,629

SOLID-STATE COLOR IMAGER AND METHOD OF MANUFACTURING THE SAME

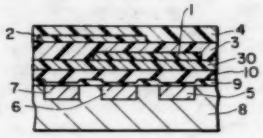
Akira Sasano; Toshio Nakano, both of Hinodemachi; Ken Tsutsui, Hachioji; Michiaki Hashimoto, Yono; Tadao Kaneko, Hinodemachi; Yoshio Taniguchi, Hino; Haruo Matsumaru, Hinodemachi, and Akiya Izumi, Mobara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 10, 1980, Ser. No. 215,073

Claims priority, application Japan, Dec. 10, 1979, 54-169848[U]

Int. Cl.³ G01J *3/34*

U.S. Cl. 250—226 **17 Claims**



1. A solid-state color imager having at least a semiconductor body which includes a plurality of sets of photosensitive regions therein, and color filter members which are arranged on the semiconductor body in correspondence with the photosensitive regions, said color filter members being formed by exposing desired areas of photosensitive films for color filter members to light and then developing said films into a layer in a desired shape for the colored filter members, the color filter members having at least two sorts of spectral transmittances different from each other, a third spectral transmittance to correspond to one of the photosensitive regions in each set being produced by combining the spectral transmittances of the first and second filter members; characterized in that the first and second filter members with respective first and second spectral transmittances are disposed at different levels above said semiconductor body, and the filter member exhibiting the spectral transmittance which substantially transmits the light to which the photosensitive films are exposed is arranged as a lower layer of the first and second filter members.

4,395,630

PHOTOELECTRIC MEASURING RULER INCLUDING FAULT DETECTION APPARATUS

Paul N. Ramsden, Leamington Spa, and Michael H. Groves, Warwick, both of England, assignors to Stanley Tools Limited, Woodside, England

Filed Jan. 19, 1981, Ser. No. 226,388

Claims priority, application United Kingdom, Jan. 18, 1980, 8001734

Int. Cl.³ G01B *3/02, 11/02;* H01J *3/14*

U.S. Cl. 250—237 G **9 Claims**

1. A displacement measuring system comprising a pair of sensors arranged in fixed relationship to each other; a member which is relatively movable in relation to each sensor and which is arranged to be sensed by each sensor so that relative movement of the member in a given direction produces a

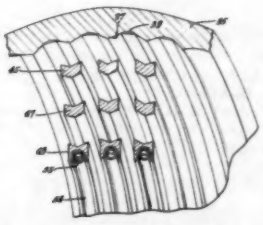
number of cyclical variations of a signal output from each sensor, the number being proportional to the magnitude of the relative movement; the sensors being substantially 180° out of phase with each other so that when the signal from each sensor is at its high value the signal from the other sensor is at its low value and vice versa; difference measuring means connected to the sensors for producing a difference signal in dependence on the signals of the sensors; counting means connected to the difference measuring means and responsive to the difference signal for counting its cycles to determine the magnitude of relative movement of said member; and sampling means for sampling the signals from the two sensors during the time that one is at its high value and the other is at its low value and vice versa and for generating a fault signal if the ratio of the magnitudes of the two signals at a sample lies outside a predetermined range.

4,395,631

HIGH DENSITY ION SOURCE

Winfield W. Salisbury, Scottsdale, Ariz., assignor to Occidental Research Corporation, Irvine, Calif.

Filed Oct. 16, 1979, Ser. No. 85,261
Int. Cl.³ H01S 9/00
U.S. Cl. 250—251 24 Claims



1. A source for a focussed high density electrically substantially neutral beam of combined positive and negative particles, including in combination:

a housing;

a substrate mounted in said housing and having a generally spherical surface;

a plurality of strips of positive ion emitter material at said surface for emitting positive particles in beams;

a first positive ion extractor grid mounted in said housing spaced downstream from said surface;

a second positive ion accelerator grid mounted in said housing spaced downstream from said first grid;

a plurality of electron emitter strips mounted in said housing spaced downstream from said second grid; and

a third electron accelerator grid mounted in said housing between said second grid and said electron emitter strips;

with said strips of positive ion emitter material aligned between said first and second grids for defining fan shaped ion beams, and

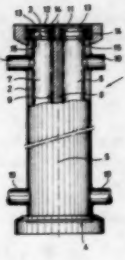
with said third grid and electron emitter strips aligned with said first and second grids for introducing electrons with said ion beams with the electrons and positive ions mixed and traveling in a single direction at substantially the same velocity to produce substantially neutral beams adjacent said electron emitter strips and ballistically focussed to a target.

4,395,632

CUVETTE FOR OPTICAL GAS-ANALYSIS APPARATUS

Rudi Röss, Bruchköbel, and Helmut Heimel, Rosneburg, both of Fed. Rep. of Germany, assignors to Leybold Heraeus GmbH, Cologne, Fed. Rep. of Germany

Filed Mar. 9, 1981, Ser. No. 241,905
Claims priority, application Fed. Rep. of Germany, Mar. 19, 1980, 3010516
Int. Cl.³ G01N 21/26
U.S. Cl. 250—343 2 Claims



1. In a cuvette for optical gas-analysis apparatus, having an enlongated metallic housing with two end-faces, two chambers which are parallel to the longitudinal axis and have radiation-reflecting wall surfaces and which are separated from each other by a partition, wherein one of the chambers is for holding a gas under investigation and the other is for holding a reference gas, and means for closing off the chambers at the end-faces of the housing including radiation-penetrable windows made of a material from the group consisting of calcium fluoride and barium fluoride and which are each initially connected by glass solder to an intermediate frame, which is connected to the housing, the improvement wherein:

(a) the intermediate frame has a U-shaped cross-section and is composed of a metal from the group consisting of gold, silver and aluminum, and

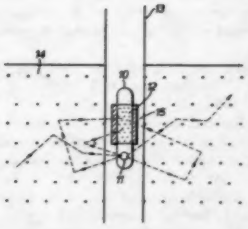
(b) the intermediate frame is connected to the window and to the housing by glass solder.

4,395,633

LEVEL GAUGE USING NEUTRON IRRADIATION

Plackottu J. Mathew, Parkville, Australia, assignor to Commonwealth Scientific and Industrial Research Organization, Campbell, Australia

Filed Aug. 28, 1980, Ser. No. 182,183
Claims priority, application Australia, Sep. 11, 1979, PE0418
Int. Cl.³ G01F 23/00
U.S. Cl. 250—357.1 8 Claims



1. Apparatus for determining the level of a material in a container, said apparatus comprising;

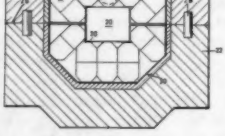
(a) generally vertical guide means extending between the base and the top of the container;

(b) a sensor positioned within said guide means;
(c) means for moving said sensor along said guide means; and
(d) means for monitoring the position of the sensor within the guide means; said sensor comprising
(i) a source of fast neutrons;
(ii) a detector for thermal neutrons, and
(iii) a sheath of a moderator-containing material surrounding said detector; whereby thermal neutrons produced by irradiation of the material by said fast neutrons and thermal neutrons produced by irradiation of said moderator-containing material by neutrons reflected by the said material are detected by said detector when said sensor is positioned within said guide means at a level which is not substantially higher than the level of the material in the container.

4,395,634
RADIOMETRIC METHODS AND MEANS

Rolf C. Böhme, Kyalami, South Africa, assignor to General Mining Union Corporation Limited

Filed Dec. 1, 1980, Ser. No. 211,919
Claims priority, application South Africa, Dec. 21, 1979, 79/6989
Int. Cl.³ G01N *23/00*; G01V *5/00*; G01T *1/20*
U.S. Cl. 250—359.1 **10 Claims**



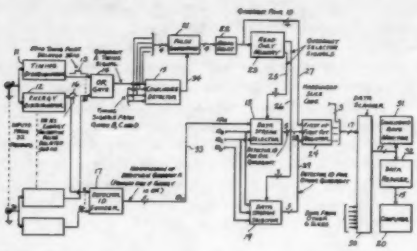
1. Apparatus for measuring the radio-active emission from a particle including a housing, a plurality of elongated scintillation crystal radiation detectors in the housing with their axes parallel to each other to define between them a passage for the particle to be measured with the passage extending in a direction which is parallel to the axes of the detectors, an elongated photomultiplier attached to each detector with its axis parallel to that of the detector, light transmitting means joining the multipliers to their detectors and means for connecting electronic measuring means to the multipliers.

4,395,635
GAMMA RAY COINCIDENCE ANALYSIS SYSTEM

Walter S. Friauf; Rodney A. Brooks, both of Bethesda; Victor J. Sank, Wheaton, and Horace E. Cascio, Olney, all of Md., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed Jan. 26, 1981, Ser. No. 228,681
Int. Cl.³ G01T *1/20*
U.S. Cl. 250—366 **12 Claims**

1. A coincidence analysis system for a multichannel nuclear emission tomograph of the type employing scintillation detectors arranged in a plurality of groups, each said group comprising a plurality of spaced respective detectors defining scintillation detector channels, each of said detector channels producing output pulses having sharp leading edges, respective discriminator means associated with each of said channels, means for connecting the detectors to the respective discriminator means, said discriminator means being each provided with means generating a timing pulse and an energy verification pulse delayed by a predetermined validation period relative to said timing pulse, each said timing pulse being produced in response to each said sharp leading edge of a detector pulse, coincidence detector means to generate a resultant coincidence signal responsive to the coincidence of timing pulses from the detector channels of any two of the groups, means to delay said

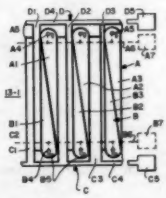


resultant coincidence signal for a time substantially equal to said energy validation period, and means to generate a data output signal responsive to the concurrence of the delayed resultant coincidence signal and the delayed energy verification pulses.

4,395,636
RADIATION IMAGING APPARATUS

Hal O. Anger; Donn C. Martin, and Michael L. Lampton, all of Berkeley, Calif., assignors to Regents of the University of California, Berkeley, Calif.

Filed Dec. 24, 1980, Ser. No. 219,983
Int. Cl.³ G01T *1/24*
U.S. Cl. 250—366 **19 Claims**



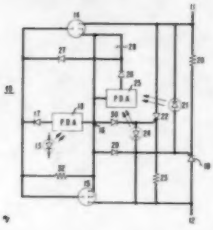
1. Apparatus for imaging incident photons, ions, electrons or nuclear particles, comprising:
event detecting means, including at least one charge multiplying means, for detecting an incident event and supplying at least one free charged particle to said charge multiplying means, an output surface of said charge multiplying means thereby emitting a multiplied charge spatially correlated to the position of said detected event; and
position sensitive anode means mounted substantially parallel to said output surface and at a moderate distance therefrom to permit said emitted charge to expand to a charge cloud before striking said anode means, the centroid of said charge cloud being spatially correlated to the position of said detected event, said anode means comprising a repetitive pattern of charge collecting regions geometrically arranged and connected to encode said charge cloud incident thereon into a plurality of electrical signals indicating the coordinate position of said centroid in a preselected system.

4,395,637

OPTICALLY TOGGLED LATCH-FREE NORMALLY OFF SWITCH

Mahmoud A. E. Hamamsy, Watchung, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 7, 1981, Ser. No. 328,367
Int. Cl.³ G02B 27/00
U.S. Cl. 250—551 6 Claims



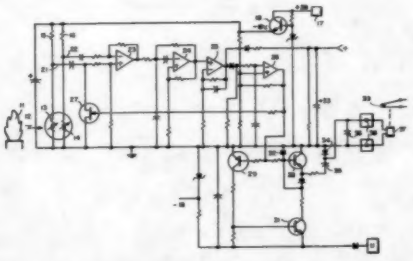
1. A switch comprising a transistor branch and at least one thyristor branch and in which the conducting state of the transistor branch is adapted to be controlled optically CHARACTERIZED IN THAT the thyristor branch includes a light source which is actuated by excess current through the thyristor branch and which is coupled to light sensitive means capable of controlling the conducting state of the transistor branch whereby excess current through the thyristor makes the transistor branch conductive.

4,395,638

SELF-CHECKING FLAME FAILURE CONTROL

Phillip J. Cade, Winchester, Mass., assignor to Electronics Corporation of America, Cambridge, Mass.

Filed Sep. 18, 1981, Ser. No. 303,616
Int. Cl.³ G01J 1/00
U.S. Cl. 250—554 6 Claims



1. A solid state self-checking system comprising

first and second sensor means for sensing the same event and generating signals which are comparable upon sensing the same event;

signal comparing means responsive to said signals from said first and second sensor means for generating a negation response in the absence of comparable signals and responsive to the presence of said comparable signals for generating a comparison response;

switching means coupled to the output of said signal comparing means for alternately interrupting comparison of said signals in said comparison means in response to said comparison response and restoring comparison in response to said negation response; and

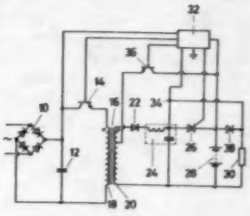
utilization means operable in response to the alternating operation of said switching means.

4,395,639

UNINTERRUPTIBLE POWER SUPPLY WITH BATTERY BACK-UP

Karl-Birger Bring, Oskarshamn, Sweden, assignor to SAB NIFE Aktiebolag, Landskrona, Sweden

Continuation-in-part of Ser. No. 198,362, Oct. 20, 1980, abandoned. This application May 6, 1982, Ser. No. 375,568
Claims priority, application Sweden, Oct. 30, 1979, 7909064
Int. Cl.³ H02J 7/00
U.S. Cl. 307—66 5 Claims



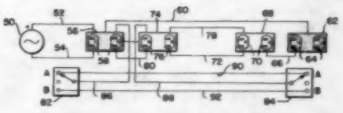
1. A method of uninterruptedly maintaining a current supply to a load normally supplied from a main source comprising the steps of providing a battery, charging said battery via a charger comprising a primary switched rectifier and a charging transformer through which said main source is supplied when the voltage from the main source is available to a sufficient extent to provide on the secondary winding of said charging transformer an operating voltage for said load and a charging voltage for said battery and automatically disconnecting the battery from the charging voltage of the secondary winding upon a voltage drop or voltage interruption from the main source and supplying the load with voltage from the battery, the battery voltage being chopped into square wave form and transformed up via the secondary winding of the charging transformer to the voltage required for the load.

4,395,640

SPECIAL ELECTRIC CONVENIENCE OUTLET (SECO)

Keith A. Bone, 19315 Annalee Ave., Carson, Calif. 90746

Filed May 4, 1982, Ser. No. 374,876
Int. Cl.³ H01H 19/14
U.S. Cl. 307—115 10 Claims



1. A controlled electricity distribution unit comprising:

(a) a conduit member having adjustable mounting means at proximal and distal ends thereof;

(b) a first plurality of electrical outlets distributively positioned at the proximal and distal ends of said conduit member;

(c) a second plurality of electrical outlets distributively positioned adjacent said proximal and distal ends of said conduit member;

(d) switching means distributively positioned near the proximal and distal ends of said conduit member, said switching means including first and second switches electrically connected to each other; and

(e) circuit means having an input line adapted to be connected to a source of external power and three separate circuits comprising:

(i) a first circuit connecting a first part of said input line to all of said plurality of outlets;

(ii) a second circuit connecting a second part of said input line to said first plurality of outlets to establish a first unique electrical operating condition for said first plurality of outlets; and

(iii) a third circuit connecting said second part of said input line to said second plurality of outlets via said first and second switches to establish a second unique electrical operating condition for said second plurality of outlets controlled by said first and second switches.

4,395,641

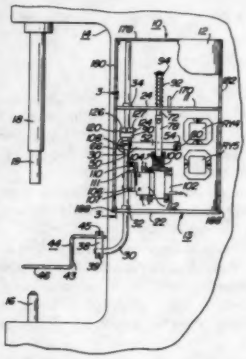
POINT OF OPERATION SAFETY DEVICE

Ronald S. Disc, Dublin, Pa., assignor to Penn Engineering & Manufacturing Corp., Danboro, Pa.

Filed Aug. 5, 1981, Ser. No. 290,397

Int. Cl.³ H01H *3/16*; F16D *9/00*; B30B *15/14*

U.S. Cl. 307—116 **10 Claims**



5. In a safety device for a press or the like the combination of

probe means for testing the work area and movable from an upper position to a lower position by gravity,

switch actuating means carried by said probe means,

a switch actuated by said switch actuating means in said lower position,

holding means for restraining said probe means in said lower position,

said switch actuating means deactuating said switch when said probe means is moved above or below said lower position.

4,395,642

SINE-SHAPING CIRCUIT

Stefan Traub, Boeblingen, Fed. Rep. of Germany, assignor to Hewlett-Packard GmbH, Boeblingen, Fed. Rep. of Germany

Continuation of Ser. No. 204,678, Nov. 5, 1980. This application Dec. 11, 1980, Ser. No. 215,296

Claims priority, application Fed. Rep. of Germany, Nov. 8, 1979, 2945093; European Pat. Off., Oct. 24, 1980, 80106510.3

Int. Cl.³ H03K *5/00*; G06G *7/16*

U.S. Cl. 307—261 **3 Claims**

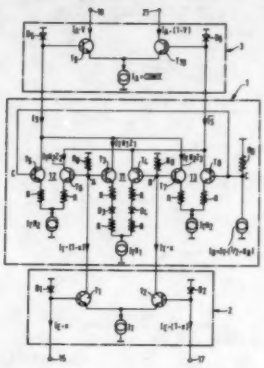
1. A circuit for converting a triangular waveform into a sinusoidal waveform comprising:

a first transistor differential amplifier having a first non-linear transfer characteristic with a first slope;

input means for supplying said first differential amplifier with a triangular input signal symmetrical to the operating point of said first differential amplifier said operating point being located in the center of said first non-linear characteristic;

output means for deriving an approximately sinusoidal signal from said first differential amplifier; and

second and third transistor differential amplifiers parallel-connected to said first differential amplifier, said second and third differential amplifiers having second and third non-linear characteristics with second and third slopes opposite to said first slope and having their operating points shifted on said second and third characteristics in



opposite directions with regard to each other and symmetrically to the operation point of said first differential amplifier, the resulting overall characteristic of said first, second and third differential amplifiers having zero slope at the extremal amplitudes of said triangular input signal.

4,395,643

BROADBAND CIRCUIT WITH RAPIDLY VARIABLE RESISTOR

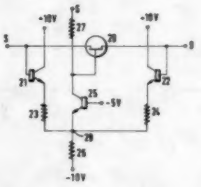
Klaus Lehmann, Mühltal, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Dec. 4, 1980, Ser. No. 212,935

Claims priority, application Fed. Rep. of Germany, Dec. 15, 1979, 2950584

Int. Cl.³ H03L *5/00*; H03G *3/20*

U.S. Cl. 307—264 **8 Claims**



1. Variable resistance electrical circuit comprising:

a first field effect transistor (**20**; **30**; **40**) having a source electrode, a drain electrode, and a single gate electrode;

a first resistor (**27**; **34**; **50**) which is connected to said gate electrode;

first transistor (**25**; **33**; **44**) connected to said gate electrode;

a second transistor (**21**, **22**; **31**; **43**, **44**) in a first emitter follower circuit having its input connected to a first electrode, which is either said source electrode or said drain electrode, and furnishing an output to said gate electrode by way of a connection through an electrode of said first transistor other than the electrode thereof most directly connected to said gate electrode,

said first transistor (**25**; **33**; **44**) being connected for common-base mode of operation between said connection through which said second transistor acts and said gate electrode,

whereby, by means of a variable voltage applied to said

resistor (27; 34; 50), the resistance of the source-drain path of said first field effect transistor (20; 30; 40) is variable.

4,395,644

DRIVE CIRCUIT

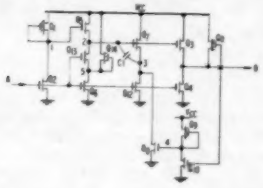
Tetsuo Misaizu, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Aug. 13, 1980, Ser. No. 177,552

Claims priority, application Japan, Aug. 15, 1979, 54-104230; May 26, 1980, 55-69745

Int. Cl.³ H03K 5/01

U.S. Cl. 307—270 **26 Claims**



1. A circuit comprising a first insulated gate field effect transistor, a drain node of said first transistor being connectable to a drain voltage, a second insulated gate field effect transistor, a source node of said first transistor and a drain node of said second transistor being electrically common, the source node of said second transistor being connectable to a source voltage, a gate node of said first transistor being capacitively coupled to the source node thereof by a capacitance, a signal node, and a control circuit responsive to signal levels at said signal node for making said first transistor and said second transistor conducting and non-conducting, respectively, thereby producing a voltage larger than said drain voltage in absolute value at the gate node of said first transistor, said control circuit including a third insulated gate field effect transistor, having a gate for receiving a signal of substantially the same phase as a signal at said signal node and having a drain connected to the gate node of said first transistor, a fourth insulated gate field effect transistor having a gate for receiving a signal of substantially the same phase as a signal at said signal node and having a drain coupled to a source of said third transistor and a source connectable to the source voltage, a fifth insulated gate field effect transistor having a gate for receiving a signal having a phase opposite that of a signal at said signal node and having a source coupled to the gate node of said first transistor and a drain connectable to the drain voltage, whereby said fifth transistor is conducting for a first level at the signal node, and is non-conducting for the second level at the signal node, said fourth transistor is conducting in response to a second level at said signal node said third transistor is conducting after said fourth transistor becomes conducting.

4,395,645

MOSFET LOGIC INVERTER BUFFER CIRCUIT FOR INTEGRATED CIRCUITS

Joseph Pernyeszi, Fairfield, Conn., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Dec. 5, 1980, Ser. No. 213,533

Int. Cl.³ H03K 19/094, 19/20, 17/687, 3/353

U.S. Cl. 307—450 **22 Claims**

1. A buffer circuit for an integrated circuit comprising:

two transistorized circuits each including

a first enhancement field effect transistor having a gate electrode, a source electrode, and a drain electrode coupled to a drain voltage source,

a first depletion field effect transistor having a gate electrode coupled to a back bias source, a source electrode coupled to said back bias source, and a drain electrode coupled to said source electrode of said first enhancement transistor,

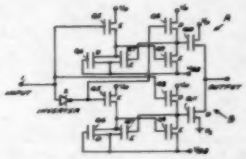
a second enhancement field effect transistor having a gate electrode, a drain electrode coupled to said drain electrode of said first depletion transistor and said source electrode of said first enhancement transistor, and a source electrode coupled to said source electrode of said first depletion transistor and said back bias source,

a second depletion field effect transistor having a gate electrode, a drain electrode coupled to said drain voltage source, and a source electrode coupled to said gate electrode of said second enhancement transistor, and

a third enhancement field effect transistor having a drain electrode coupled to said source electrode of said second depletion transistor and said gate electrode of said second enhancement transistor, a source electrode coupled to said back bias source, and a gate electrode coupled to said drain electrode of said second enhancement transistor and said source electrode of said first enhancement transistor;

an output circuit coupled to said source electrode of said second depletion transistor, said drain electrode of said third enhancement transistor and said gate electrode of said second enhancement transistor of each of said two circuits, said drain voltage source and a source voltage source; and

an input circuit coupled to at least a selected one of said gate electrode of said first enhancement transistor of one of said two circuits and said gate electrode of said second depletion transistor of the other of said two circuits and a selected one of said gate electrode of said first enhancement transistor of said other of said two circuits and said gate electrode of said second depletion transistor of said one of said two circuits.



4,395,646

LOGIC PERFORMING CELL FOR USE IN ARRAY STRUCTURES

Moises Cases, Delray Beach; Wayne R. Kraft, Coral Springs; Victor S. Moore, Deerfield Beach; William L. Stahl, Jr., Coral Springs, and Nandor G. Thoma, Boca Raton, all of Fla., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Nov. 3, 1980, Ser. No. 203,170

Int. Cl.³ H03K 19/017, 19/094, 19/177

U.S. Cl. 307—468 **6 Claims**

1. A logic performing cell for use in array structures comprising:

a plurality of parallel connected logic circuits;

an output circuit line in each parallel connected logic circuit;

a plurality of field effect transistors including at least a first and last field effect transistor connected in series in said output circuit line in each parallel connected logic circuit;

a plurality of input data circuit lines intersecting said output circuit line and adapted to receive input control signals;

a gate terminal formed in each of said field effect transistors at said intersecting of a respective one of said input data circuit lines with said output circuit line for introducing control signals establishing a logic function for each of said parallel connected logic circuits;

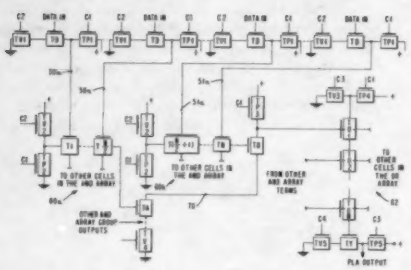
a recombining circuit for recombining the logic functions for each of said parallel connected logic circuits;

an output circuit for said recombining circuit;

coupling means for coupling each of said parallel connected logic circuits to said recombining output circuit;

a charge means for each of said parallel connected logic circuits;

a drain and a source terminal formed in each of said field effect transistors;



connecting means connecting said drain and source terminal of adjacent field effect transistors in each of said parallel connected logic circuits together and for connecting the drain terminal of said first field effect transistor in each of said parallel connected logic circuits to said charge means and the source terminal of said last field effect transistor in each of said parallel connected logic circuits to said coupling means.

4,395,647

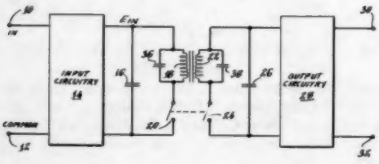
HALF-WAVE SIGNAL ISOLATOR WITH MEANS FOR CONTROLLING FLUX IN THE COUPLING TRANSFORMER

William H. Morong, III, Newton, Mass., assignor to Analog Devices, Incorporated, Norwood, Mass.

Filed Nov. 3, 1980, Ser. No. 203,451

Int. Cl.³ H03K *5/08*

U.S. Cl. 307—540 **6 Claims**



1. In a signal isolator of the half-wave type comprising a coupling transformer having primary and secondary windings; first and second switches connected to said transformer windings, respectively, one of said switches serving to modulate a signal applied to the transformer primary and the other serving to demodulate the signal developed at the secondary of said transformer; and means for driving said switches in synchronism between closed and open states at a relatively high frequency;

that improvement in such signal isolator comprising:

resonating capacitor means coupled to said transformer during the open switch state to form therewith a resonant circuit tuned at least approximately to said frequency and providing controlled transformer current variations during the open switch state with relatively smooth transitions between the open and closed switch states.

4,395,648

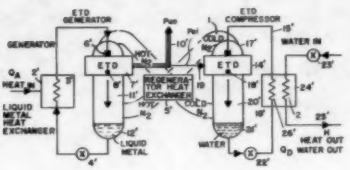
ELECTROTHERMODYNAMIC (ETD) POWER CONVERTER

Alvin M. Marks, 153-16 Tenth Ave., Whitestone, N.Y. 11357

Filed Feb. 23, 1981, Ser. No. 237,290

Int. Cl.³ H02N *1/00*

U.S. Cl. 310—10 **7 Claims**



1. In a heat/electric power converter using an electrothermodyamic Ericsson cycle, a source of heat power at temperature $\overline{T}_1$, a first heat exchanger, a first fluid, a gas circulating in said cycle, a first pump for said first fluid, an electrothermodynamic heat/electric power generator, an external electrical load, a second heat exchanger, said second heat exchanger functioning as a heat regenerator, a second fluid, a second pump for said second fluid, a third heat exchanger functioning as a sink for heat power at temperature $\underline{T}_2$, an electrothermodynamic compressor, a first charged aerosol comprising said first fluid forming charged liquid droplets in said gas in said generator at a temperature T_1, and a charged aerosol comprising said second fluid forming charged liquid droplets in said gas in said compressor at a temperature T_2, said gas entering said generator at a pressure P_1 and temperature $\underline{T}_1$, after passing through said heat exchanger from the said compressor output at a temperature $\overline{T}_2$, being heated in the said second heat exchanger-regenerator from said temperature $\overline{T}_2$ to said temperature $\underline{T}_1$, and being heated from said temperature T_1 to said temperature $\underline{T}_1$ in which $\overline{T}_1 > T_1 > \underline{T}_1$, by contact with the said first fluid during the formation of said first charged aerosol at a pressure P_1, the heat-kinetic power of said gas at the said temperature T_1 and pressure P_1 being converted to an electric power output at said electrical load, said first charged aerosol being discharged and said first fluid being pumped by said first pump to said first heat exchanger, and thence back to said generator, said gas exiting from said generator at Pressure P_2 and temperature T_1, in which $P_2 < P_1$, said gas entering said second heat exchanger-regenerator where it is cooled to said temperature $\overline{T}_2$ at the same pressure P_2 as it enters said compressor, a small proportion of said output electrical power being supplied to said compressor to compress the said gas from pressure P_2 to pressure P_1 at temperature T_2; whereby said Ericsson electrothermodynamic cycle operates at a theoretical efficiency of $100[(T_1-T_2)/T_1]\%$.

4,395,649

LINEAR ELECTROMAGNETIC VIBRATOR

Ludwig Thome; Karl Wanner, both of Leinfelden-Echterdingen, and Karlheinz Bretthauer, Clausthal, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Mar. 20, 1979, Ser. No. 22,158

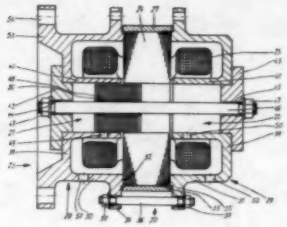
Claims priority, application Fed. Rep. of Germany, Mar. 20, 1978, 2812067

Int. Cl.³ H02K *33/00*

U.S. Cl. 310—15 **31 Claims**

1. A linear electromagnetic vibrator comprising a stator having a pair of spaced poles having parallel planar end faces, said stator being composed of a stack of laminations extending parallel to each other and normal to said end faces of said poles; a winding for said stator producing an energizing magnetic field extending in a first direction normal to said end faces; an armature guided for linear movement in a direction

transverse to said first direction to be moved upon excitation of said winding towards a rest position, said armature having opposite parallel faces extending parallel to the direction of movement of said armature and parallel to said end faces of said poles, said armature being composed of a stack of laminations extending parallel to each other and normal to said opposite faces of said armature and normal to the direction of movement of said armature whereas said stator laminations extend parallel to said direction of movement; and a pair of return spring means acting in opposite direction on said armature for exerting at least in the end regions of the movement of the armature a force to said armature in a direction towards the rest position.



4,395,650

ELECTROMAGNETIC DIAPHRAGM DISK ACTUATOR

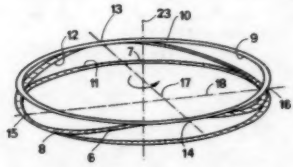
Günther Kettenring, Freising, Fed. Rep. of Germany, assignor to Max-Planck-Gesellschaft zur Forderung, Gottingen, Fed. Rep. of Germany

Filed Apr. 9, 1981, Ser. No. 252,610

Claims priority, application Fed. Rep. of Germany, Apr. 25, 1980, 3016126

Int. Cl.³ H02K 7/10

U.S. Cl. 310—82 **23 Claims**



1. An electromagnetic diaphragm actuator comprising of stator means for providing a driving force mounted in an outer housing, said stator means including a plurality of pairs of opposed electromagnets, an outer cover spaced outwardly from said stator means, a rotating shaft operatively connected to a deformable magnetic actuator diaphragm rotatably positioned between said stator and said outer cover, said diaphragm including first and second gear teeth systems respectively positioned on opposite sides and extending about the periphery thereof, corresponding third and fourth gear teeth systems substantially opposing one another, respectively positioned about said stator and electromagnets and about the interior periphery of said outer cover, the spacing between said third and fourth gear teeth systems being such that said diaphragm is tensioned therebetween and formed to develop a cylindrical surface therein, said first and second gear teeth systems each respectively engaging said third and fourth gear teeth systems, each at two diametrically opposed positions, with said first and third engaging positions being radially displaced about 90° with respect to said second and fourth engaging positions so that said diaphragm remains engaged with said third and fourth gear teeth systems.

4,395,651

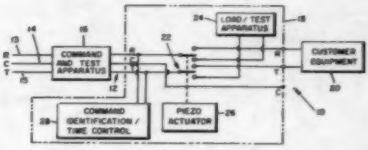
LOW ENERGY RELAY USING PIEZOELECTRIC BENDER ELEMENTS

Yujiro Yamamoto, 1201 Via La Jolla, San Clemente, Calif. 92672

Filed Apr. 10, 1981, Ser. No. 253,119

Int. Cl.³ H01L 41/08

U.S. Cl. 310—317 **29 Claims**



1. A pair of piezo-electric deformation switches:

means for energizing each of them to charged and deformed condition and for deenergizing each of them to discharged and relaxed condition;

means for changing the energization of one of said switches at a controlled rate over a given time; and

means for rapidly charging or discharging the other of said switches as an incident to change in a given degree in the energization of said one of said switches.

4,395,652

ULTRASONIC TRANSDUCER ELEMENT

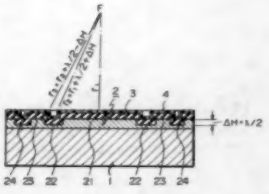
Toshiharu Nakanishi, Kamakura; Miyo Suzuki, Fujisawa, and Hiroji Ohigashi, Zushi, all of Japan, assignors to Toray Industries, Inc., Japan

Filed Sep. 11, 1980, Ser. No. 186,258

Claims priority, application Japan, Sep. 13, 1979, 54-116654; Sep. 13, 1979, 54-116656

Int. Cl.³ H01L 41/02

U.S. Cl. 310—334 **6 Claims**



1. An ultrasonic transducer element, comprising:

a polymer piezoelectric film divided into a plurality of sections corresponding generally to adjacent fresnel zones, said plurality of sections being concentrically arranged annular sections;

electrodes arranged on opposing surfaces of said piezoelectric film for exciting said sections to emit ultrasonic waves of the same frequency and phase in response to an electrical signal supplied to said electrodes; and

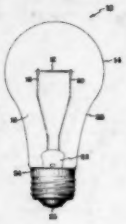
said sections being sized, shaped and positioned so that said ultrasonic waves from said plurality of sections arrive at a focal point removed from said piezoelectric film, substantially in phase; said sections being alternately arranged as salient and hollow sections, the distance between the surface of said salient and hollow sections facing said focal point being approximately equal to one-half wavelength of said ultrasonic waves.

4,395,653

ELECTRIC LAMP WITH NEODYMIUM OXIDE VITREOUS COATING

William A. Graff, Willoughby, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Jun. 24, 1981, Ser. No. 276,976
Int. Cl.³ H01K 1/32
U.S. Cl. 313—112 13 Claims



1. An electric lamp which includes a light transparent glass envelope, a visible light source located within said envelope, and a coating which contains neodymium oxide melted into a transparent vitreous frit which is deposited on the surface of said envelope to absorb light emitted by said light source selectively in the green and yellow wavelength region of the visible spectrum.

4,395,654

FLUORESCENT DISPLAY APPARATUS

Takashi Hattori, and Satoru Makita, both of Mobara, Japan, assignors to Futaba Denshi Kogyo Kabushiki Kaisha, Chiba, Japan

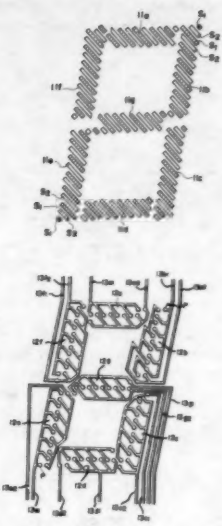
Filed Sep. 24, 1980, Ser. No. 190,218
Claims priority, application Japan, Oct. 4, 1979, 54-137534[U]
Int. Cl.³ H01J 63/06, 63/02
U.S. Cl. 313—496 4 Claims

1. In a segment type fluorescent display apparatus for effecting luminous display of numerals or characters by a combination of bar-shaped segmented anodes defining a maximum dimension and having phosphor layers deposited thereon which are excited to illuminate by selectively impinging electrons emitted from a cathode upon said segmented anodes, the improvement comprising:

each anode segment comprising plural groups of subsegments, each group including plural respective of said sub-segments electrically connected in common and extended to a respective external terminal;

the sub-segments of each group of each anode segment being intermixedly arranged and compositely defining a common predetermined anode segment shape and size; and

the sub-segments of each group having maximum dimensions substantially smaller than the maximum dimension of



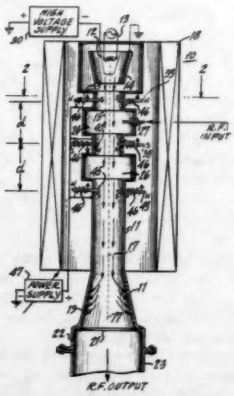
the respective compositely shaped and sized anode segment.

4,395,655

HIGH POWER GYROTRON (OSC) OR GYROTRON TYPE AMPLIFIER USING LIGHT WEIGHT FOCUSING FOR MILLIMETER WAVE TUBES

Gunther E. Wurthman, Lincroft, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 20, 1980, Ser. No. 198,395
Int. Cl.³ H01J 25/00
U.S. Cl. 315—4 2 Claims



1. A microwave gyrotron tube comprising:

an evacuated elongated chamber;

a cathode located at one end of said chamber;

an injection gun located at said one end of said chamber including means for injecting a hollow, circular cylindrical electron beam into said chamber coaxial with the principal longitudinal axis thereof;

a solenoid means mounted around said tube for providing a longitudinal magnetic field in said chamber for focussing said electron beam;

said chamber including at least one r-f input cavity mounted in the path of said beam and said cavity having means for coupling r-f gyrotron energy to said beam;

the other end of said tube including a means for collecting said electron beam and a means for coupling microwave energy out of said tube;

at least one strong-field quadrupole magnetic means in said chamber adjacent to said electron beam and located between said injection gun and said cavity for reshaping said electron beam into a hollow elliptical electron beam; and

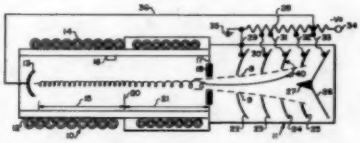
said quadrupole magnetic means including four magnets having poles extending into said chamber adjacent to said electron beam and being symetrically spaced about said beam in a plane perpendicular to said longitudinal axis with the adjacent ones of said poles having opposite polarities.

4,395,656

GYROTRON TRANSMITTING TUBE

Henry G. Kosmahl, Olmsted Falls, Ohio, assignor to The United States of America as represented by the United States National Aeronautics and Space Administration, Washington, D.C.

Filed Dec. 24, 1980, Ser. No. 220,212
Int. Cl.³ H01J *25/00*
U.S. Cl. 315—4 **8 Claims**



1. An electromagnetic wave generator operating in the 20 GHz to 500 GHz range and comprising:

a gyrotron tube having an electron emitting cathode at one end;

an electron collector disposed at the other end of said gyrotron tube, said other end having disposed thereat a focusing ring through which electrons are injected into said collector;

a solenoid disposed around said gyrotron tube establishing a first magnetic field which causes electrons emitted by said cathode to follow helical paths; and

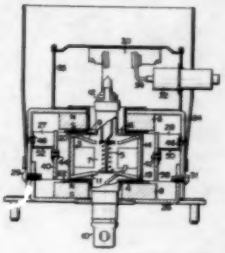
means for establishing a second magnetic field between said first magnetic field and said focusing ring, said second magnetic field being characterized by decreasing from the B value of said first magnetic field to substantially zero over an axial distance of from $1\lambda_c$ to $3\lambda_c$ in a direction away from said cathode, and at such a rate as to establish optimum conversion of spiral energy of the spent electrons into forward motion.

4,395,657

MAGNETRON UNIT WITH A MAGNETIC FIELD COMPENSATING MEANS

Isao Tada; Toshio Okamura; Akira Kousaka, and Kaichiro Nakai, all of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Dec. 15, 1980, Ser. No. 216,677
Claims priority, application Japan, Dec. 21, 1979, 54-177559[U]
Int. Cl.³ H01J *25/50*
U.S. Cl. 315—39.71 **7 Claims**



1. A magnetron unit comprising:

an anode cylinder having a number of resonant cavities;

a cathode disposed within the anode cylinder and extending along the axis of the anode cylinder with an interaction space defined between the resonant cavities and the cathode;

a pair of pole pieces for generating a magnetic field in the interaction space;

cover means for hermetically sealing the anode cylinder;

a pair of permanent magnet members made of ferrite, disposed outside the anode cylinder and magnetically coupled with the pole pieces, thereby defining a main magnetic flux path in the interaction space; and

at least one magnetic member made of magnetic compensating alloy, disposed between the permanent magnet members and magnetically coupled with the permanent magnet members, thereby defining a magnetic flux bypath parallel to the main magnetic flux path, the magnetic permeability of the magnetic member being reduced as the magnetic member is heated by heat generated in the anode cylinder.

4,395,658

PROPER LIGHT EMISSION INDICATING DEVICE FOR COMPUTER FLASH DEVICE

Tadashi Okino, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 27, 1980, Ser. No. 181,675
Claims priority, application Japan, Aug. 31, 1979, 54-111538
Int. Cl.³ H05B *41/32*; G01J *1/16*
U.S. Cl. 315—134 **2 Claims**

1. An indicating device for a computer flash unit comprising:

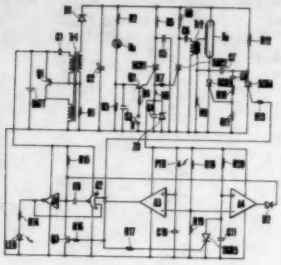
sensing means for producing a confirmation signal when a flash causing a proper exposure has been emitted;

indicating means for producing a signal;

timing means for energizing the indicating means for a predetermined time interval in response to a confirmation signal;

reset means for resetting the timing means when a confirma-

tion signal occurs during energization of the indicating means by said timing means; and



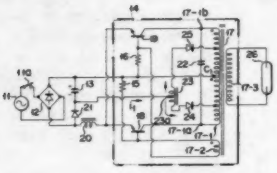
overriding means connected to said timing means to nullify the operation of the timing means when a predetermined time has elapsed after initiation of a flash.

4,395,659

POWER SUPPLY DEVICE

Nanjou Aoike; Kenichi Inui, both of Yokohama, and Yasunobu Koshimura, Tokyo, all of Japan, assignors to Toshiba Electric Equipment Corporation, Tokyo, Japan

Filed Mar. 5, 1981, Ser. No. 240,943
Claims priority, application Japan, Mar. 10, 1980, 55-29875
Int. Cl.³ H05B *37/02*
U.S. Cl. 315—209 R **5 Claims**



1. A power supply device comprising:

an AC source;

rectifying means for rectifying a voltage from the AC power source and producing a pulsating output voltage;

a high frequency wave generator connected to receive said pulsating output of the rectifying means to produce a high frequency output; and

an auxiliary DC power source connected to rectify part of said high frequency AC output generated from the high frequency wave generator and store it and, when the pulsating output voltage of the rectifying means is at a low level, to discharge it so that an auxiliary voltage is supplied to the high frequency wave generator,

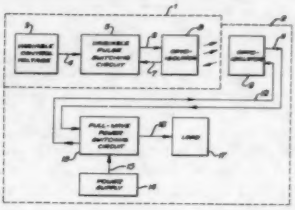
in which said auxiliary DC power source comprises a feedback winding for generating a high frequency AC voltage which is part of an output of the high frequency wave generator, a capacitor connected at one terminal to a first intermediate tap of the feedback winding, a first series circuit of a first current limiting inductor and first rectifying diode connected between the other terminal of the capacitor and a second intermediate tap of the feedback winding, a second series circuit of a second current limiting inductor and second rectifying diode connected between the other terminal of the capacitor and a third intermediate tap of the feedback winding, and discharge control means connected in series with said capacitor and provided, together with said capacitor, at the input side of the high frequency wave generator, and wherein said the first and second current limiting inductors are wound on a common core.

4,395,660

LAMP DIMMER CIRCUIT UTILIZING OPTO-ISOLATORS

E. Paul Waszkiewicz, 2826 Channel Dr., Ventura, Calif. 93003

Filed Dec. 31, 1980, Ser. No. 221,708
Int. Cl.³ H05B *37/02*
U.S. Cl. 315—291 **24 Claims**



1. An electrical load control circuit for selectively varying the effective power to be supplied to a load, comprising

means for generating a selectively variable control signal proportional to the power to be supplied to the load,

means responsive to said control signal generating means and to the occurrence of initiating signals for producing cyclical light output pulses,

means optically coupled to said light pulse producing means and adapted for electrical connection to a power source, and responsive to such pulses, for switching power from such power source to the electrical load, and

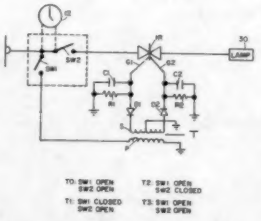
means responsive to said power switching means for generating such initiating signals.

4,395,661

TIME-VARIABLE CONTROL FOR LAMP INTENSITY

William A. Becker, c/o Andrew S. Viger, 900 Milam Bldg., San Antonio, Tex. 78205

Filed Jul. 6, 1981, Ser. No. 280,704
Int. Cl.³ H05B *37/02*
U.S. Cl. 315—360 **2 Claims**



1. A time-variable illumination control apparatus for gradually increasing light intensity prior to awakening to avoid eye discomfiture from a sudden increase in light intensity, comprising:

a. a light;

b. timing means for providing switch control signals;

c. a switch network responsive to said switch control signals to supply alternating current signals during preselected times; and

d. a variable power supply including:

(i) a triac coupled between said switch network and said light; said triac having positive and negative gate control leads;

(ii) positive and negative charging means responsive to switch control signals from said switch network to provide, respectively, positive and negative voltages during preselected times;

(iii) a positive gate control network consisting of parallel connected capacitor and resistor coupled to said positive gate control lead and to said positive charging means; and

(iv) a negative gate control network consisting of a parallel connected capacitor and resistor coupled to said negative gate control lead and to said negative charging means;

e. said positive and negative gate control networks being responsive to, respectively, positive and negative voltages from said respective charging means such that respective capacitors are charged during preselected times;

f. said positive and negative gate control network providing gating voltages gradually decreasing in amplitude to, respectively, said positive and negative gate leads to said triac, such that the alternating current through said triac to said light gradually increases;

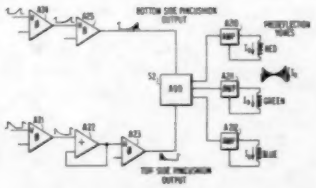
such that the illumination from said light is gradually increased prior to awakening to avoid the need for eye adjustment to sudden increases in light intensity, thereby avoid resulting eye discomfiture.

4,395,662

CORRECTION CIRCUITS FOR PROJECTION TELEVISION

Charles W. Sexton, Jr., Suffolk, Va., assignor to General Electric Company, Portsmouth, Va.

Filed May 27, 1981, Ser. No. 267,602
Int. Cl.³ H01J *29/56*
U.S. Cl. 315—371 **16 Claims**



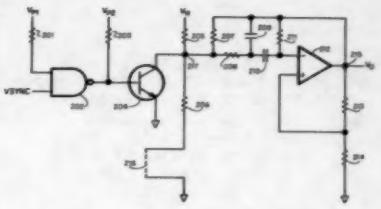
1. In a projection television of the type having three picture tubes arranged side by side on a horizontal axis, said picture tubes separately displaying red, green and blue information of a color television picture, a separate projection lens adjacent the face plate of each picture tube, and a remote screen on which are projected the superposed images generated on the face plates of said picture tubes, each of said picture tube being provided with a main deflection yoke for deflecting the generated cathode ray beam to produce picture images, the improvement wherein each of said pisture tubes is additionally provided with a pre-deflection yoke and correction circuits for driving the pre-deflection yokes of said picture tubes, said correction circuits comprising a trapezoidal correction circuit, a top and bottom pin cushion correction circuit, a side pin cushion correction circuit, and a horizontal width and linearity correction circuit.

4,395,663

CIRCUIT AND METHOD OF LINEARITY CORRECTION FOR CRT DEFLECTION CIRCUITS

Gerald Mauktelow, Austin, Tex., and Kenneth T. Wolff, Medway, Mass., assignors to Data General Corporation, Westboro, Mass.

Filed Dec. 5, 1980, Ser. No. 213,265
Int. Cl.³ H01J *29/70, 29/76*
U.S. Cl. 315—403 **10 Claims**



1. Electrical apparatus for generating a deflection signal for the electron beam in a raster scan CRT, said apparatus comprising:

active bandpass filter means for generating a first deflection signal waveform;

means for generating a second deflection signal waveform; and

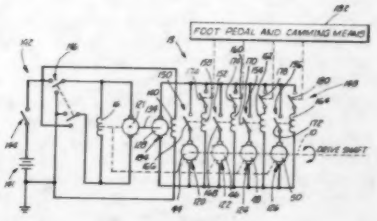
means for alternating between said filter and said second waveform means, such that said filter generates the deflection signals for said electron beam during scan and said second waveform means generates the deflection signals for said electron beam during retrace.

4,395,664

ENERGY CONVERSION APPARATUS

William G. Terbush, 1104 SW. 67th, Oklahoma City, Okla. 73125

Filed Sep. 26, 1980, Ser. No. 191,277
Int. Cl.³ H02P *1/54*
U.S. Cl. 318—112 **13 Claims**



1. An energy conversion apparatus, comprising:

an electrically conductive field coil;

a first field pole piece;

means for electromagnetically associating said first field pole piece with said field coil so that said first field pole piece has a first magnetic polarity;

a second field pole piece;

means for electromagnetically associating said second field pole piece with said field coil so that said second field pole piece has a second magnetic polarity;

two drive armatures disposed along a common axis, each armature having two armature pole means, including pole pieces radially positioned between said common axis and said first and second field pole pieces, for interacting with

the magnetic polarities of said field pole pieces to provide rotational movement about the common axis; and

control means for energizing the armature pole means of a first one of said two drive armatures at a first time and for energizing the armature pole means of a second one of said two drive armatures at a second time while maintaining the armature pole means of said first armature energized.

4,395,665

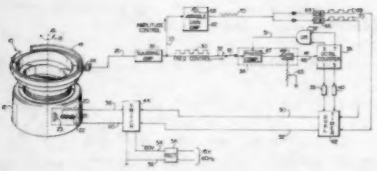
CONTROL SYSTEM FOR VIBRATING A MEMBER AT ITS RESONANT FREQUENCY

Gerald L. Buchas, Forestville, Conn., assignor to The Arthur G. Russell Company, Incorporated, Bristol, Conn.

Filed Jun. 9, 1981, Ser. No. 271,819

Int. Cl.³ H02P 5/40

U.S. Cl. 318—114 **14 Claims**



5. For use with a device having a member supported for vibratory motion and an electromagnetic driver including a coil surrounding a core, a control system for causing said driver to drivingly vibrate said member at the member's resonant frequency, said control system comprising:

a means for detecting the vibratory movement of said member and for producing a detected frequency electrical signal having a frequency equal to the vibratory frequency of said member;

a means responsive to said detected frequency signal for producing an electrical drive signal supplied to said driver, said electrical drive signal consisting of spaced pulses of electric current constrained to flow in opposite directions through said coil of said driver during alternate ones of said pulses and which pulses appear at a frequency equal to that of said detected frequency signal;

said means for producing an electrical drive signal including a source of D.C. power, a switching means connected between said source and said coil for switching between one state at which power from said source is connected to flow in one direction through said driver coil and a second state at which power from said source is connected to flow in the other direction through said driver coil, and means including a phase-locked loop circuit for switching said switching means between said first and second states at a frequency directly related to the frequency of said detected frequency signal, said phase-locked loop circuit including a phase comparator and a voltage controlled oscillator, said phase comparator having said detected frequency signal as an input thereto, and said voltage controlled oscillator having an output frequency equal to Nf where f is the frequency of the input signal to the phase comparator and N is an integer, a divide by 2N counter with 2N decoded outputs, and two one shot multivibrators each connected with a different one of the outputs of said counter for producing, in combination, two trains of pulses the pulses of which alternate in time and which are supplied to said switching means to switch said switching means between its first and second states.

4,395,666

D.C. SERIES EXCITED TRACTION MOTOR CAPABLE OF OPERATING WITH A CONTINUOUS CURRENT POWER SUPPLY

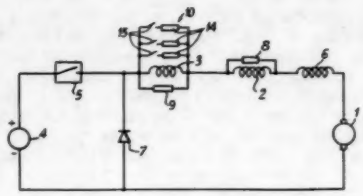
N'Guyen U. Thuy, La Verpilliere, France, assignor to Societe CEM Compagnie Electro-Mecanique & Cie SNC, Paris, France

Filed Mar. 25, 1981, Ser. No. 247,341

Claims priority, application France, Mar. 26, 1980, 80 06682

Int. Cl.³ H02P 5/06

U.S. Cl. 318—139 **8 Claims**



1. A direct current, series excited traction motor circuit, comprising:

an armature coil;

first and second field coils connected in series with said armature coil and with each other to generate additive magnetic flux;

a smoothing coil connected in series with said armature and field coils;

a diode connected in parallel with the series connection of said armature, field and smoothing coils;

a current shunting device connected in parallel with said first field coil for controlling a shunt current to progressively reduce the field flux generated by said first field coil; and

a current chopper for controlling the supply of direct current to said coils.

4,395,667

NON-LINEAR CONTROL ARRANGEMENT FOR PRINTING MACHINES

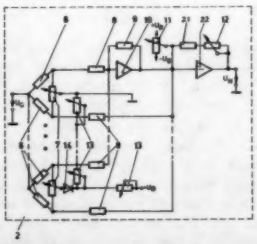
Klaus Tonn, Leipzig, German Democratic Rep., assignor to VEB Kombinat Polygraph Werner Lamberz Leipzig, Leipzig, German Democratic Rep.

Filed Jul. 8, 1981, Ser. No. 283,019

Claims priority, application German Democratic Rep., Jul. 25, 1980, 222867

Int. Cl.³ H02P 5/00

U.S. Cl. 318—309 **6 Claims**



1. A non-linear control arrangement for a driving unit, particularly for use in printing machinery, comprising a source of a basic electrical signal; means for producing a control signal non-linearly dependent on said basic signal, including a plurality of adjustable resistor-diode bridges coupled in parallel to

one another and each having a first and a second input and a first and a second output, a pair of resistors respectively coupled between said first input and said first and second outputs, an adjustable potentiometer coupled between said outputs and having a wiper connected to said second input, and a diode interposed between said wiper and said second input, said first inputs being connected in parallel from said basic signal source, said producing means further including a source of a plurality of electrical potentials, including a plurality of additional adjustable potentiometers respectively associated with said bridges and connected to said second inputs thereof, a summation member having an input and an output, and an amplifier having an input and an output, said first outputs of said bridges being connected to said input of said summation member and said second outputs of said bridges and said output of said summation member being connected to said input of said amplifier; and means connected from said output of said amplifier for controlling the speed of rotation of the driving unit.

4,395,668

MOTORS

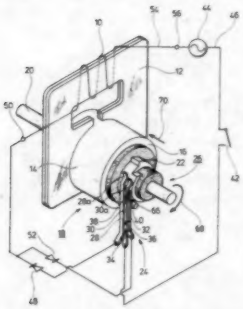
Fumito Komatsu, 69-1632-12-banchi, Nomura Aza, Ooaza Hirooka, Shiozirishi, Naganoken, Japan

Filed Oct. 6, 1981, Ser. No. 308,956

Claims priority, application Japan, Oct. 11, 1980, 55-142294; Jan. 14, 1981, 56-4078

Int. Cl.³ H02P 1/48

U.S. Cl. 318—439 **5 Claims**



1. In a synchronous motor having a permanent-magnet motor, a stator, rectifiers for converting the AC power supply into rectified current, and a commutator for switching the direction of current as the rotor rotates during start-up, and means for switching the AC supply directly to the stator when the rotor approaches synchronous speed; the improvement wherein the commutator comprises a rotary component which rotates with the rotor and engages fixed switching elements for effecting switching of the current to rectify current for the motor, said rotary component being axially displaceable to release it from contact with said switching elements, and means are provided for effecting said displacement when the rotor approaches synchronous speed, said displacement allowing said switching elements to contact each other to permit the AC current to be supplied directly to the stator by way of said switching elements.

4,395,669

ELECTRICAL MACHINE HAVING CONTROLLED CHARACTERISTICS AND ITS APPLICATION TO A WIND-DRIVEN MACHINE

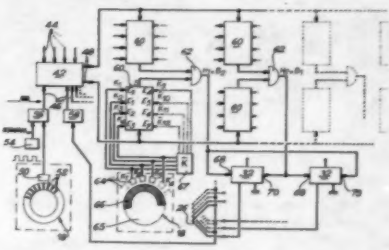
Michel Berna, Domont; Michel Kant; Jean P. Vilain, both of Thourotte, and Rene Seger, Limeil Brevannes, all of France, assignors to Association Gradient, Compiegne, France

Filed Jun. 19, 1980, Ser. No. 160,842

Claims priority, application France, Jun. 20, 1979, 79 15809

Int. Cl.³ H02K 29/00; H02P 9/00

U.S. Cl. 318—502 **5 Claims**



1. An electric machine having controllable characteristics and being capable of transforming electrical energy into mechanical energy comprising:

a stator;

a rotor rotatably mounted relative to said stator;

an armature associated with said stator said armature including at least two independent winding assemblies each being adapted for independent connection;

field producing means associated with said rotor;

means for monitoring the instantaneous position of said rotor with respect to said stator and for supplying logic signals which together represent the instantaneous relative position of the armature and field; and

control means responsive to said logic signals for supplying coded control instructions representative of said instantaneous position, the control means including independent switch means being associated with each winding assembly for selectively switching the connections of each winding assembly, the control means further including an even number of multiplexers having control inputs for receiving the coded control instructions and the logic signals supplied by the monitoring means to supply at their outputs logic signals applicable to the corresponding coded input, the logic signals supplied by each multiplexer being grouped together in twos in order to define connection and switching instructions applied to each of the switching means for controlling said independent connections of said winding assemblies for spatially and temporally controlling the beginning and the end of conduction therein thereby controlling the operating characteristics of said electric machine.

4,395,670

HYBRID ELECTRICAL BRAKING METHOD AND SYSTEM FOR TOOL EQUIPMENT HAVING INDUCTION MOTOR DRIVES

Allen F. Podell, Palo Alto, Calif., assignor to Cuisinarts, Inc., Greenwich, Conn.

Filed Feb. 23, 1981, Ser. No. 236,930

Int. Cl.³ H02P 3/24

U.S. Cl. 318—758 **4 Claims**

1. The method of electromagnetically rapidly braking rotor rotation in a fractional-Horsepower induction motor having at least one running winding, a starting winding, a starting capacitor, and a starting relay, said braking occurring after the motor has been turned off, said method comprising the steps of:

immediately after the induction motor has been turned off connecting the starting capacitor in series with at least one of said windings forming a resonant loop circuit for producing an initial rapid braking,

immediately after the motor has been turned off feeding unidirectional current through at least one running winding for creating a unidirectional magnetic field in the motor for further braking the rotor, and

automatically shutting off said unidirectional current flow after a brief predetermined time period which is sufficiently long for the rotor to stop before the unidirectional current flow is turned off.

4,395,671

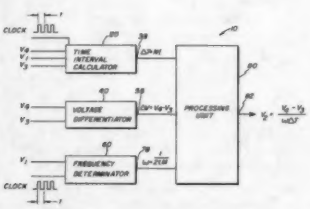
CONTROL SYSTEM AND METHOD FOR MOTOR STARTING

Louis M. Sandler, North Reading, and Robert G. Bristol, Everett, both of Mass., assignors to Emhart Industries, Inc., Indianapolis, Ind.

Continuation of Ser. No. 50,177, Jun. 20, 1979, abandoned. This application Jan. 4, 1982, Ser. No. 336,982

Int. Cl.³ H02P *1/42*

U.S. Cl. 318—786 **12 Claims**



1. In a motor start control system of the type having a current sending device for producing a signal proportional to the main winding current of said motor and a control circuit responsive to said signal for deenergizing the start winding of said motor when the peak amplitude of said signal is less than a threshold level, the improvement wherein said control circuit includes means for storing said threshhold level as a proportion of the initial peak amplitude of said main winding current.

4,395,672

BATTERY CHARGER CONTROLLER

Lee V. Gassaway, 1660 SW. 196th Ave., Aloha, Oreg. 97005

Filed Apr. 2, 1981, Ser. No. 250,395

Int. Cl.³ H02J *7/06*

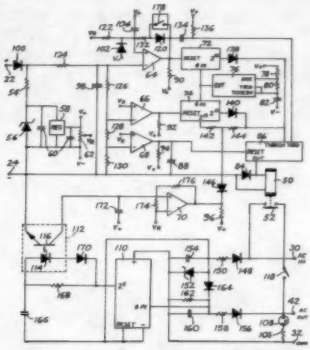
U.S. Cl. 320—31 **12 Claims**

1. A controller for a battery charger having an alternating current input and a direct current output for connection to a battery to be charged, the controller comprising:

(a) electric switch means arranged for connection in the alternating current circuit of the charger for controlling activation and deactivation of the charger,

(b) electric actuator means for said switch means having a direct current electric circuit,

(c) voltage level comparison means having an output operatively connected to the actuator means and an input connected to the direct current output of the charger and



operable when the battery voltage is below a predetermined level to cause the actuator means to keep the electric switch means open and the charger deactivated and operable when the battery voltage is above said predetermined voltage level to cause the actuator means to close the electric switch means and activate the charger, and

(d) delay start switch means connected across the voltage level comparison means, and having open and closed positions and operable in one of said positions to prevent activation of the charger and in the other of said positions to allow activation of the charger.

4,395,673

CONTROLLED RECTIFIER MOTOR VEHICLE BATTERY CHARGER

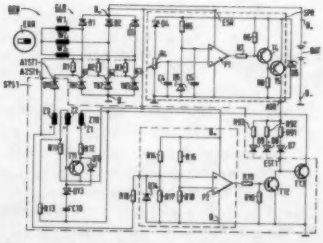
Wolfgang Kurz, Hemmingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Fed. Rep. of Germany

Filed May 1, 1981, Ser. No. 259,555

Claims priority, application Fed. Rep. of Germany, May 2, 1980, 3016955

Int. Cl.³ H02J *7/14*

U.S. Cl. 320—61 **1 Claim**



1. A three-phase a.c. generator and rectifier unit for a motor vehicle comprising a rotor having at least one permanent magnet for generator excitation, a stator having three windings (W1,W2,W3) for alternating current excited by said at least one magnet, diodes (D1,D2,D3) respectively connecting ends

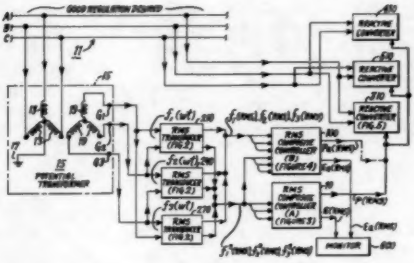
of said stator windings with one pole of a storage battery, three semiconductor controlled rectifiers (TH1, TH2, TH3) respectively connecting the same ends of said windings to the other pole of said storage battery, a voltage regulator (SPR) having an on-off d.c. output, and three control circuits for respectively controlling, without the use or interposition of any oscillator circuit, said semiconductor controlled rectifiers in response to said output of said voltage regulator so as to pass an entire half wave of current excited in the stator winding connected to the respective rectifier whenever said output of said rectifier is in its "on" condition, each of said control circuits comprising pulse transformer (ZTR) in a pulse shaping circuit and having a driving transistor (T11) therefor, said pulse transformer having an output winding (Z3) connected with the control path of one of said semiconductor controlled rectifiers, and also a switching transistor (T13) having its switching path interposed between the switching path of said driving transistor (T11) and the negative pole of said battery and having its control electrode connected with said output of said regulator, and a Schmitt trigger unit (P2) having its output connected to said control electrode of said switching transistor (T13) through a control transistor (12) and having its control input connected with a corresponding one of said stator windings for releasing said switching transistor (13) for control thereof by said output of said voltage regulator quickly at the beginning of every half wave of said corresponding one of said stator windings.

4,395,674

REGULATING SYSTEM EMPLOYING AN RMS COMPOSITE CONTROLLER

Fred W. Kelley, Jr., Media, Pa., assignor to General Electric Company, Philadelphia, Pa.

Filed Dec. 23, 1981, Ser. No. 333,962
Int. Cl.³ G05F 1/70
U.S. Cl. 323—210 **6 Claims**



1. In a regulating system coupled to a three phase power system at a critical area, said regulating system having reactive converters respectively coupled across each of the phase-to-phase voltages of the three phase power system for delivering a leading or lagging current to compensate for a load of varying reactance, said regulating system comprising;

(a) means for developing a first signal representative of the R.M.S. value of the positive sequence component of the R.M.S. values of the phase-to-phase voltages of the three phase power system at the critical area;

(b) means for developing second signals representative of desired voltage regulation levels of each of the phase-to-phase voltages of the three phase power at the critical area;

(c) means responsive to said first and said second signals for developing error signals for said regulating system which are used to hold the first signal and second signals in close correspondence if within a desired range of the reactive converters;

(d) comparison means for sensing non-correspondence between said first signal and each of said second signals, and developing in dependence upon said sensed non-correspondence command signals indicative of whether normal or transient conditions are present in the power system;

(e) gating control means responsive to said command signals for supplying control signals for each of the reactive converters so as to regulate the voltage at said critical area both during normal and transient conditions;

(f) a first, a second and a third arrangement, each comprising two circuit branches connected in parallel, each branch comprising an inductor and a thyristor connected in series, said thyristors being oppositely poled and each of said thyristor providing a unidirectional path through its inductor; a capacitor connected in parallel with each of said two branches; said first, second, and third arrangements for two circuit branches being respectively connected between the first and second, second and third, and third and first phases of the three phase power system;

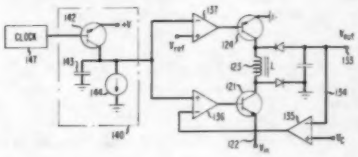
(g) said gating control means, (1) in effecting said voltage regulation during normal conditions, causing each of thyristors of each of the first, second and third arrangements to have a conduction angle of 180 degrees or less in response to said comparison means sensing the presence of normal power conditions in the power system, and (2) in effecting said voltage regulation during transient conditions, causing each of said thyristors to have a conduction angle of greater than 180 degrees in response to said comparison means sensing the presence of transient power conditions in the power system.

4,395,675

TRANSFORMERLESS NONINVERTING BUCK BOOST SWITCHING REGULATOR

Rouben Toumani, Randolph, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 22, 1981, Ser. No. 313,957
Int. Cl.³ G05F 1/46
U.S. Cl. 323—271 **13 Claims**



1. A switching type power conditioning circuit comprising:

input means for accepting a DC voltage source,

output means for accepting a load to be energized by the DC voltage source,

a signal winding inductive energy storage medium,

a first switch interconnecting one end terminal of the storage medium to the input means,

a flyback diode interconnecting the one end terminal to a signal reference point,

a decoupling diode interconnecting an opposite end terminal of the storage medium to the load,

a second switch interconnecting the opposite end terminal to the signal reference point, and

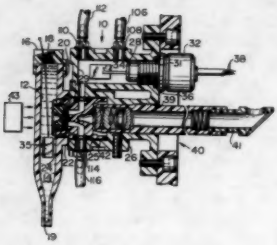
means for synchronously driving the first and second switches with overlapping first and second duty cycles, respectively.

4,395,676

FOCUSED APERTURE MODULE

John D. Hollinger; Michael R. Groves, and Walter R. Hogg, all of Miami, Fla., assignors to Coulter Electronics, Inc., Hialeah, Fla.

Filed Nov. 24, 1980, Ser. No. 209,611
Int. Cl.[3] G01N 27/00
U.S. Cl. 324—71.4 14 Claims



1. A particle analyzing apparatus for detecting properties of particles, said particle analyzing apparatus including a container for holding a liquid suspension of the particles to be analyzed, a first liquid holding chamber, a flow director having a bore which forms a liquid passageway between said container and said first chamber, a second liquid holding chamber, aperture means including a sensing aperture which forms a constricted liquid and electrical passageway between said first chamber and said second chamber, means for providing an electrical current through said sensing aperture to generate detectable electrical signals with the passage of the particles through said sensing aperture, fluid moving means for providing a pressure drop across said sensing aperture to move a quantity of liquid from said first chamber to said second chamber, means for providing a particle free liquid to said first chamber to form a liquid sheath around a quantity of said liquid suspension from said flow director, the improvement comprising:

means for providing a substantially constant pressure drop across said flow director to move said quantity of said liquid suspension from said container to said first chamber, whereby said substantially constant pressure drop establishes a substantially constant flow rate of said liquid suspension through said sensing aperture;

said bore of said flow director having an elongated configuration dimensioned to form a fluid resistor for limiting the flow of said quantity of said suspension through said bore, whereby said fluid resistor sufficiently restrains the flow therethrough to a desired flow rate so as to allow for said pressure drop across said flow director to be of a magnitude that is subject to regulation and measurement.

4,395,677

HALL EFFECT TESTER FOR HEATED WINDOW GRIDS

Roland W. Petersdorf, Sterling Heights, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Feb. 13, 1981, Ser. No. 234,273
Int. Cl.[3] G01R 33/00, 31/08
U.S. Cl. 324—117 H 3 Claims

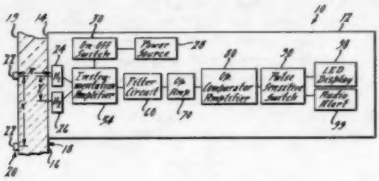
1. A solid state electrical continuity test probe instrument for detecting breaks in a plurality of electrically connected conductive resistive defroster grid lines located on a window glass plate installed in a motor vehicle, said grid lines elongated in a common first direction and uniformly transversely spaced from each other a predetermined first distance on the inside surface of the window glass plate area to be heated, a DC voltage source of the vehicle connected to said grid lines providing substantially equal currents passing through each grid line for heating the plate area, said instrument comprising:

a probe housing suitable for hand-held operation including a sensing frontal end having a substantially planar glide surface;

said housing including first and second Hall Effect sensors arranged on an axis parallel to said glide surface;

said sensors spaced on said axis with their centers located a predetermined second distance less than said predetermined first distance between the transversely spaced grid lines; said instrument characterized in that with said glide surface positioned in flush intimate contact with the outside surface of the vehicle window glass plate area and with said axis of the sensors oriented substantially transverse to the grid lines, said probe sensors adapted to be moved along the plate area in a direction transverse to said common first direction successively crossing each grid line;

whereby said first sensor is caused to alternately enter and



depart maximum and minimum conducting grid line flux density regions while said second sensor is caused to concurrently enter and depart minimum and maximum conducting grid line flux density regions and so forth;

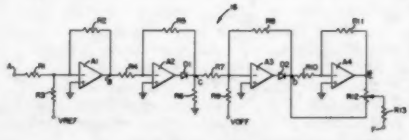
solid state detection circuit means within said housing supplied for a secondary DC power source, said circuit means operative for receiving and amplifying the phase difference in sinusoidal output voltage signals from said sensors to provide a composite sinusoidal output signal, and said circuit means including comparator means producing an output triggering pulse operative for successively activating and deactivating indicating means on said probe housing informing the operator of the state of electrical continuity of each successive grid line being traversed by said sensors, thereby obviating the need for the operator to enter the vehicle to conduct a continuity test of said grid lines with said probe instrument.

4,395,678

LINEARIZING CIRCUIT FOR METER DISPLAYS

Edmond R. Pelta, Los Altos Hills, Calif., assignor to EMC Corporation, Chicago, Ill.

Filed Aug. 15, 1980, Ser. No. 178,651
Int. Cl.[3] G01R 15/10; G06G 7/12
U.S. Cl. 324—132 17 Claims



1. An electrical circuit for providing a correction signal in response to a basic signal only when the basic signal is in a predetermined portion of and is defined between opposing end points within a range over which the basic signal varies between a minimum and a maximum value, the correction signal having a substantially zero value at and outside of the end points of the predetermined portion of the range, comprising

means for receiving the basic signal and a reference signal and for providing a first output which is a function of the

basic signal and which has a zero reference determined by said reference signal,

means for receiving said first output and an offset signal and for providing a second output having a maximum signal magnitude determined by said reference signal and wherein the end points of the predetermined portion of the range are determined by said offset signal,

and means for summing a selected portion of said second output with the basic signal whereby an adjusted basic signal is obtained only within the predetermined portion of the range of variation.

4,395,679

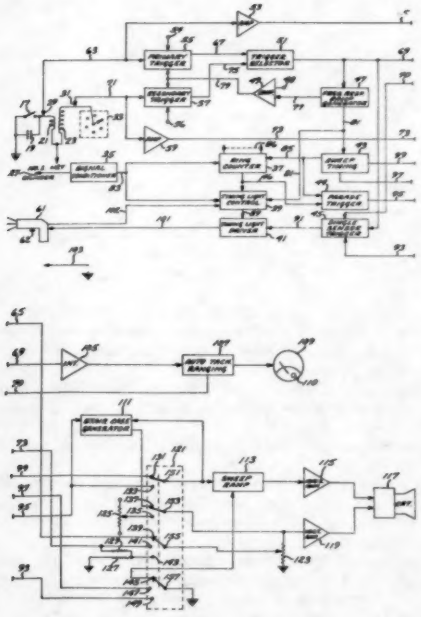
SINGLE SENSOR ENGINE ANALYZER WITH NOISE REJECTION AND AUTOMATIC TRIGGERING CIRCUIT

Stephen A. Gniewek, Glendora, and Dick M. Olsen, Pasadena, both of Calif., assignors to Clayton Manufacturing Company, El Monte, Calif.

Division of Ser. No. 14,807, Feb. 26, 1979, which is a division of Ser. No. 854,768, Nov. 25, 1977. This application Nov. 6, 1980, Ser. No. 204,476

Int. Cl.³ F02P *17/00*

U.S. Cl. 324—379 **5 Claims**



1. In an improved apparatus for analyzing the operation of a multiple cylinder internal combustion engine wherein plug firings to obtain cylinder ignition are displayed on a cathode ray tube and engine timing is determined by driving a timing light in synchronism with cylinder ignition, the improvement comprising:

a first sensor means adapted for connection to the primary winding of the engine's ignition coil for sensing the plug firings of all the cylinders in said engine;

a second sensor means adapted for connection to the secondary winding of the engine ignition coil for sensing the plug firings of all the cylinders in said engine;

a first means responsive to said first sensor means for generating timing control signals representative of cylinder ignition;

a second means responsive to said second sensor means for generating timing control signals representative of cylinder ignition; and,

selector means adapted for receiving the timing control signals from said first and second timing control signal generating means and generating timing control signals in response to the first in time control signals received from said first and second timing control signal generating means.

4,395,680

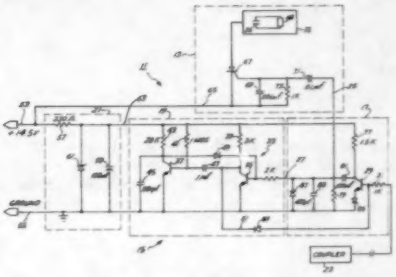
AUTOMOBILE TIMING LIGHT

Azriel Slutzky, San Jose, Calif., assignor to Sun Electric Corporation, Crystal Lake, Ill.

Filed Dec. 29, 1980, Ser. No. 220,819

Int. Cl.³ F02P *17/00*

U.S. Cl. 324—392 **5 Claims**



1. A timing light for use with an automobile engine having at least one cylinder, the automobile engine intermittently providing a firing voltage to the one cylinder, comprising, in combination:

(a) flash means for providing a flash of light;

(b) couple means for interconnection to the automobile engine and for providing an input signal representative of the firing voltage

(c) trigger means for activating said flash means in response to said input signal; and

(d) skip circuitry means, responsive to said input signal, for disabling said trigger means from responding to said input signal for a substantially fixed, predetermined period of time after every activation of said flash means by said trigger means, whereby said flash of light has a predetermined brightness.

4,395,681

SYSTEM FOR COMPENSATING THE OFFSET VOLTAGE OF A DIFFERENTIAL AMPLIFIER

Robert Hornung, Mennecy, and Gerard Lebesnerais, Perthes En Gatinis, both of France, assignors to International Business Machines Corp., Armonk, N.Y.

Filed Dec. 23, 1980, Ser. No. 219,543

Claims priority, application France, Jan. 9, 1980, 80 00750

Int. Cl.³ H03F *3/45*

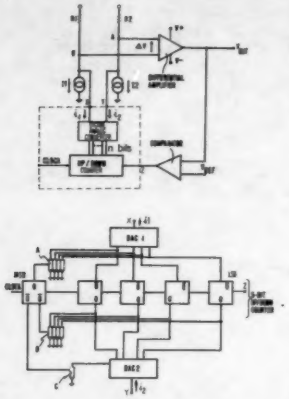
U.S. Cl. 330—259 **6 Claims**

1. A system for compensating the offset voltage of a differential amplifier comprising:

an operational amplifier provided with two generators of input signals whose difference is to be amplified;

an offset voltage compensation loop, including a comparator, an n-bit up/down counter, and a digital-analog converter means; the output of said comparator being connected to the input of said n-bit up/down counter, and the outputs of said counter being connected to the inputs of said digital-analog converter means;

said digital-analog converter means including first and second n-1 bit digital-analog converters, the output of each converter being connected respectively to one of said generators of input signals so as to modulate the input



signals; and in which the inputs of said first converter are connected to the complementary outputs of n-1 bits of said counter, and the inputs of said second converter are connected to the real outputs of said n-1 bits of said counter.

4,395,682

DIFFERENTIAL OUTPUT CIRCUIT

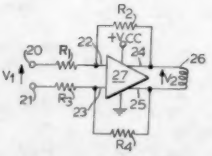
Nobuyoshi Yokobori, Osaka; Tetsuo Maeda, Neyagawa, and Yoshiaki Igarashi, Ikoma, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 29, 1980, Ser. No. 220,722

Claims priority, application Japan, Dec. 28, 1979, 54-172555

Int. Cl.³ H03F 3/45

U.S. Cl. 330—260 **5 Claims**



1. A differential output circuit comprising: a two-phase differential amplifier which has a first output which changes its output voltage in response to a voltage applied to a first input and has a second output which changes its output voltage in response to a voltage applied to a second input, said differential amplifier being driven by a single power source; a load which is connected between said first and second outputs, said first output and first input being connected together by a first negative feedback resistor, said second output and second input being connected together by a second negative feedback resistor; a first resistor and a second resistor are respectively connected at one end thereof with said first and second inputs; wherein said load is supplied with current flowing either in a normal or reverse direction according to the polarity of a potential difference between the other ends of said first and second resistors.

4,395,683

FREQUENCY SYNTHESIZERS

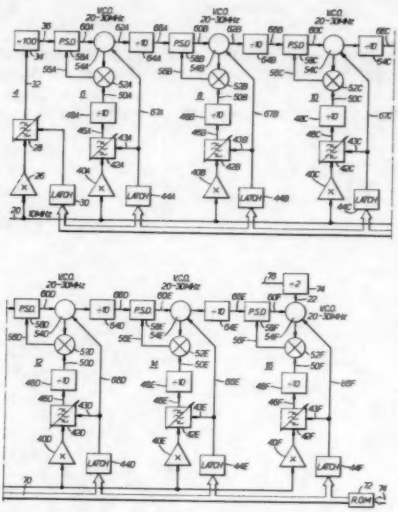
Peter P. Connell, Marlow, and Malcolm F. Morgan, High Wycombe, both of England, assignors to Racal-Dana Instruments Limited, Bracknell, England

Filed Jun. 10, 1981, Ser. No. 272,107

Claims priority, application United Kingdom, Jul. 12, 1980, 8022857

Int. Cl.³ H03L 7/22

U.S. Cl. 331—2 **4 Claims**



1. A stage for a frequency synthesizer, for producing an adjustable frequency whose value determines the value of one of the digits in the synthesized output frequency, the stage comprising

means responsive to a predetermined reference frequency to produce multiples thereof lying within a predetermined frequency range,

selectively-settable bandpass filter means for selecting one of the multiples,

frequency dividing means connected to receive the selected multiple to produce a control frequency,

controllable oscillator means producing the said adjustable frequency,

phase-locked loop means connected to control the frequency of the controllable oscillator means in dependence on the said control frequency and on the adjustable frequency of a preceding stage, and

pre-setting means producing a control signal connected to selectively set the bandpass filter means.

4,395,684

R.F. PRIMED PLASMA LIMITER FOR RADAR RECEIVER PROTECTOR

Harry Goldie, Randallstown, and Suman D. Patel, Silver Spring, both of Md., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Sep. 10, 1981, Ser. No. 300,762

Int. Cl.³ H01P 1/14

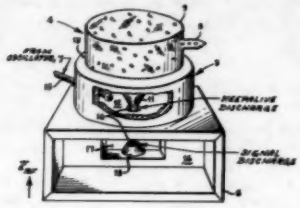
U.S. Cl. 333—13 **5 Claims**

1. In a radar receiver protector having a microwave trans-

mission line for transmitting and receiving radar signals the improvement residing in an r.f. primed plasma limiter, said r.f. primed plasma limiter comprising

an r.f. re-entrant cavity mounted on the exterior surface of said microwave transmission line,

means for establishing an r.f. electric field in said re-entrant cavity, and



a container filled with halogen gas inserted through said re-entrant cavity and into said microwave transmission line, whereby interaction of said r.f. electric field and said halogen gas generates a continuous supply of electrons in said halogen gas, said electrons diffusing from the re-entry cavity region to the microwave transmission line region and enabling plasma breakdown of said halogen gas in response to radar signal pulses propagating through said transmission line.

4,395,685

WAVEGUIDE JUNCTION FOR PRODUCING CIRCULARLY POLARIZED SIGNAL

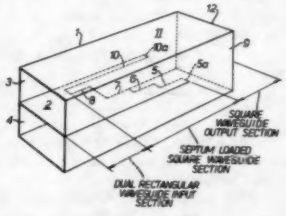
Arthur B. C. Davies, Sandown, and Andrew P. Norris, Newport, both of England, assignors to Plessey Overseas Limited, Ilford, England

Filed May 1, 1981, Ser. No. 259,482

Claims priority, application United Kingdom, May 1, 1980, 8014553

Int. Cl.³ H01P *1/17, 5/12*

U.S. Cl. 333—125 **5 Claims**



1. A junction between three waveguides in which one of the waveguides is formed in a channel of uniform cross section and is divided into two parallel waveguide channels so as to define the other two of the three waveguides by an asymmetrical stepped septum comprising first step means including a plurality of first steps which advance progressively in one direction and second step means including at least one second step which follow the first step means and which returns in an opposite direction.

4,395,686

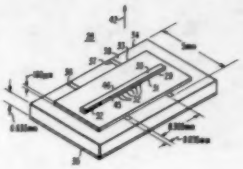
ATTENUATION OF HIGHER ORDER WIDTH MODES IN MAGNETOSTATIC WAVE DEVICES

John D. Adam, Murrysville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 2, 1981, Ser. No. 308,011

Int. Cl.³ H01P *1/19*; H03H *9/00*

U.S. Cl. 333—151 **17 Claims**



1. A magnetostatic wave device operable with microwave signals and operable within a biasing magnetic field, comprising:

material suitable for propagating magnetostatic waves in a first direction and having a finite width transverse to said first direction;

a first and second transducer located in spaced apart relationship in association with said material for generating and receiving magnetostatic waves along a propagation path therebetween in said first direction; and

a plurality of resistive strips spaced apart from one another and positioned above said material and transverse to said propagation path for attenuating selected modes of propagating magnetostatic waves occurring due to said finite width of said material.

4,395,687

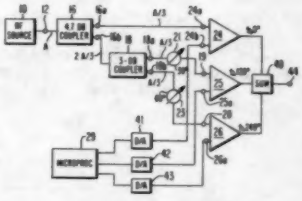
ADJUSTABLE PHASE SHIFTER

Erwin F. Belohoubek, Kendall Park, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jun. 10, 1981, Ser. No. 272,288

Int. Cl.³ H03H *11/20*; H01P *1/18*

U.S. Cl. 333—164 **7 Claims**



1. A signal controlled radio frequency (RF) phase shifter comprising:

divider means responsive to an RF input signal for power dividing said RF input signal into three power divided RF signals at substantially equal power levels;

means comprising first, second and third circuits, respectively, each having an RF signal input terminal, a control signal terminal, and an output terminal, each circuit being receptive of a different one of said power divided RF signals at its input terminal for providing an RF signal at its output terminal at an amplitude which is a function of a parameter of a control signal applied to its control signal terminal; and

means for combining the RF signals present at said output terminal of said first, second and third circuits at relative phases of 0°, 120° and 240°, respectively, so that by adjust-

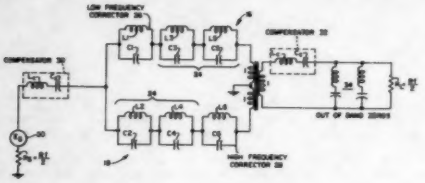
ment of said parameter of the control signals applied to the respective control terminals of said first, second and third circuits the phase shift imparted to said RF input signal can be controlled through 360°.

4,395,688

LINEAR PHASE FILTER WITH SELF-EQUALIZED GROUP DELAY

Robert W. Sellers, Palm Bay, Fla., assignor to Harris Corporation, Melbourne, Fla.

Filed Aug. 11, 1981, Ser. No. 291,937
Int. Cl.³ H03H *7/075, 7/09*
U.S. Cl. 333—169 **32 Claims**



1. A filter for filtering an electrical signal to pass said electrical signal within a predetermined bandwidth of frequencies centered around a predetermined center frequency comprising:

an input coupled to receive said electrical signal;

an output for providing a filtered output signal; and

a pair of lattice arms coupled in parallel between said input and output, wherein each arm includes a plurality of parallel resonant LC resonators connected in series along each arm, each of said resonators having a different resonant frequency within the bandwidth of said filter,

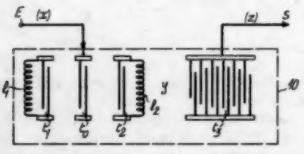
wherein the capacitors of the resonators in each arm have values which are substantially exponentially related in accordance with the frequency of resonance of the resonator they are in to the capacitance determined for resonance at the center frequency.

4,395,689

ELASTIC SURFACE WAVE RECURSIVE FILTER

Michel Feldmann, 45, rue Saint Lambert, 75015 Paris, and Jeannine Henaff, 3ter, Place Marquis, 92140 Clamart, both of France

Filed May 13, 1981, Ser. No. 263,269
Claims priority, application France, Jun. 10, 1980, 80 12869
Int. Cl.³ H03H *9/64, 9/25*
U.S. Cl. 333—195 **2 Claims**



1. An elastic surface wave filter, comprising:

a substrate adapted to propagate elastic surface waves;

a first tuned transducer;

a second tuned transducer having a coefficient of transmission;

said first and second transducers disposed on said substrate to form a passive resonator for said elastic surface waves;

an extra transducer, disposed on said substrate between said first and second transducers and connected to an input of the filter, forming a means for introducing an elastic surface wave into said resonator whereby a resonant elastic surface wave is obtained in said resonator, partly transmitted through said second transducer, and a transmitted elastic surface wave propagates on the output side of said second transducer;

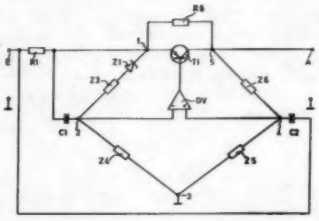
a transversal filter having a predetermined transfer function without poles, said transversal filter disposed on said substrate on the output side of said second transducer for receiving said transmitted elastic surface wave, said transversal filter connected to an output of the filter.

4,395,690

TWO-TERMINAL-PAIR NETWORK SIMULATING AN INDUCTANCE

Karl-Heinz Parras, Nuremberg, Fed. Rep. of Germany, assignor to TE KA DE Felten & Guilleaume Fernmeldeanlagen GmbH, Nuremberg, Fed. Rep. of Germany

Filed Jun. 8, 1981, Ser. No. 271,183
Claims priority, application Fed. Rep. of Germany, Jun. 12, 1980, 3021960
Int. Cl.³ H03H *11/48*
U.S. Cl. 333—214 **9 Claims**



1. A two-terminal-pair circuit having an input terminal pair and an output terminal pair and simulating an inductance, the circuit comprising a first ohmic resistor, the voltage-carrying terminal of the input terminal pair being connected to one terminal of the first ohmic resistor, a bridge circuit having bridge branches and two opposite bridge diagonal terminals, two capacitors each connecting a respective one of the two bridge diagonal terminals to a respective one of the terminals of the first ohmic resistor, a difference amplifier having two inputs each connected to a respective one of the two bridge diagonal terminals, a transistor having a base connected to the output of the difference amplifier, the transistor having a collector-emitter path connected in a bridge branch in series with an impedance, the emitter of the transistor being connected to the other terminal of the first resistor, and the collector of the transistor forming the voltage-carrying terminal of the output terminal pair.

4,395,691

BEAM DEFLECTION SYSTEM

Wolfgang Knauer, Malibu, Calif., assignor to Hughes Aircraft Company, El Segundo, Calif.

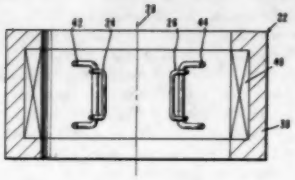
Filed Mar. 4, 1982, Ser. No. 354,699
Int. Cl.³ H01F *7/00*
U.S. Cl. 335—210 **16 Claims**

1. A charged particle beam deflection system comprising:

first and second deflection electromagnetic coils positoned adjacent the beam path so that electrical energization of said deflection coils causes beam deflection; and

first and second compensation electromagnetic coils respectively positioned adjacent said first and second deflection coils, said coils each having a number of turns, a radius from the beam path and a wire radius, and a wire resistance such that the incremental change in magnetic field

during coil current penetration from the wire skin to the wire full cross-section is substantially equal and opposite



for the compensation coils with respect to the deflection coils.

4,395,692

APPARATUS FOR MAGNETIZING A CONVERGENCE DEVICE FOR IN-LINE COLOR-PICTURE TUBES AND METHODS OF ADJUSTING CONVERGENCE WITH SUCH APPARATUS

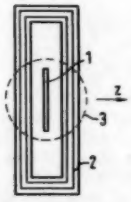
Erhard Kienle, Eislingen; Walter Kornaker, Berkheim, and Felix Greiner, Stuttgart, all of Fed. Rep. of Germany, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Dec. 8, 1980, Ser. No. 214,408

Claims priority, application Fed. Rep. of Germany, Dec. 12, 1979, 2949851

Int. Cl.³ H01F *13/00*

U.S. Cl. 335—284 **11 Claims**



1. Apparatus for magnetizing the permanent-magnet convergence device of an in-line color-picture tube, wherein permanent magnets located around the neck of the tube in a plane perpendicular to the tube axis, hereinafter referred to as "convergence-device plane", are magnetized or remagnetized, by which magnetization the electron beams in the tube are deflected relative to each other in different directions until they converge, said apparatus comprising:

electrically excitable coils mounted around the neck of the tube having their magnetic axes located in the convergence-device plane, said coils having cross sectional dimensions in the convergence-device plane greater than the dimensions perpendicular thereto, and coil axes lying in the convergence-device plane.

4,395,693

ELECTRICAL WINDING FOR A TRANSFORMER, A CHOKE COIL OR THE LIKE

Marlene Marinescu, Frankfurt am Main, Fed. Rep. of Germany, assignor to Teldix GmbH, Heidelberg, Fed. Rep. of Germany

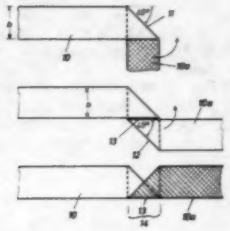
PCT No. PCT/DE80/00150, § 371 Date Jun. 9, 1981, § 102(e) Date Jun. 9, 1981, PCT Pub. No. WO81/01219, PCT Pub. Date Apr. 30, 1981

PCT Filed Oct. 16, 1980, Ser. No. 276,350

Claims priority, application Fed. Rep. of Germany, Oct. 25, 1979, 2943124

Int. Cl.³ H01H *85/00*

U.S. Cl. 336—223 **4 Claims**



1. An electrical winding having a conductor which is radially subdivided into 1 through n subconductor tapes, and wherein within the winding said subconductor tapes are twisted in such a manner that the tape initially lying innermost, after twisting, comes to lie outermost, the tape lying at the second innermost position, after twisting, comes to lie at the second outermost position, etc., wherein the improvement comprises that the subconductor tapes 1 through (n−1) are formed of two partially overlapping tape sections which in the overlap region are conductively connected together at the side edges of the tape sections; that the n^{th} subconductor tape is made of one piece and forms one of the outwardly disposed subconductor tapes of the conductor; that the subconductor tapes 2 through n are laced through between the overlapping tape sections of the first subconductor tape; that the conductor tapes 3 through n are laced through between the overlapping tape sections of the second subconductor, the n^{th} tape being laced through the overlapping tape sections of the $(n-1)^{th}$ conductor, each of the first through $(n-1)^{th}$ conductor tapes being produced from a double width tape wherein two regions are formed by severing half the tape width, the conductor tape extending in said region being offset with respect to itself by one tape width and said regions overlapping in part, one tape region being folded about the side edge of the tape by 180° in the overlap region.

4,395,694

THERMOSTAT CONSTRUCTION EMPLOYING ARAMIDE INSULATION

Glenn E. Wehl, North Canton, Ohio, assignor to Portage Electric Products, Inc., North Canton, Ohio

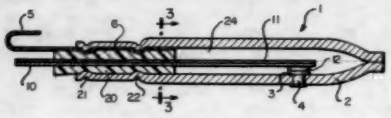
Filed Jun. 23, 1982, Ser. No. 391,128

Int. Cl.³ H01H *71/02*

U.S. Cl. 337—112 **4 Claims**

1. In a thermostatic device comprising a casing, at least one bimetallic element, a contact associated with that bimetallic element, a second contact within the casing for mating with said first contact in order to complete an electric circuit, means for electrically connecting said bimetallic element to an external circuit and means for connecting said second contact to an external electrical circuit, the improvement which comprises

the use of an aramide insulating sleeve in an open end of said casing to electrically insulate said bimetallic element and associated electrically conductive parts from other parts of said thermostatic device.



4,395,695

NON-CONTACT MAGNETIC POTENTIOMETER

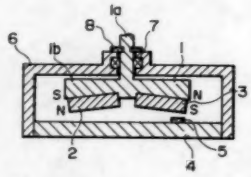
Shigekazu Nakamura, Ageo, Japan, assignor to Copal Company Limited, Tokyo, Japan

Filed Jul. 22, 1981, Ser. No. 285,330

Claims priority, application Japan, Jul. 25, 1980, 55-101928; Jul. 25, 1980, 55-101929; Jul. 25, 1980, 55-101930

Int. Cl.³ H01L *43/04*

U.S. Cl. 338—32 H **5 Claims**



1. A non-contact magnetic potentiometer comprising a rotatable first yoke to which an angular displacement is to be transmitted, a second yoke arranged as opposed to and spaced from said first yoke, a hall effect device fixedly located in parallel with said second yoke between said first yoke and second yoke, and a pair of permanent magnets magnetized in the thickness direction and secured to said first yoke as inclined to said hall effect device, a hall electromotive force being put out of said hall effect device in response to the angle of rotation of said first yoke when said first yoke is rotated.

4,395,696

PLASTIC EMERGENCY POWER PACK FOR VEHICLE TRAILER

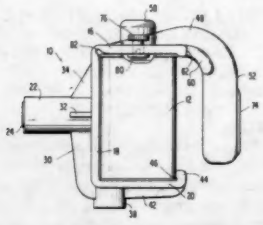
Roger O. Menard, P.O. Box 1216, Clearfield, Pa. 16830

Filed Feb. 26, 1980, Ser. No. 124,741

The portion of the term of this patent subsequent to Feb. 27, 1996, has been disclaimed.

Int. Cl.³ B60Q *1/00, 1/46*

U.S. Cl. 340—74 **21 Claims**



1. An emergency power pack adapted to be connected to an unhitched trailer of a tractor-trailer of the type which has a plug on said tractor and a mating socket on said trailer to provide an electrical connection therebetween when hitched for controlling the lights on said trailer from a first source of power on said tractor, which comprises:

a second source of power comprising a battery;

a plastic case for supporting said battery;

an adapter plug adapted to mate with said socket;

flasher means electrically connected to said adapter plug and said battery for flashing the lights on said trailer when said adapter plug is mated with said socket when said trailer is unhitched from said tractor; and

means formed integrally on said case for housing said adapter plug.

4,395,697

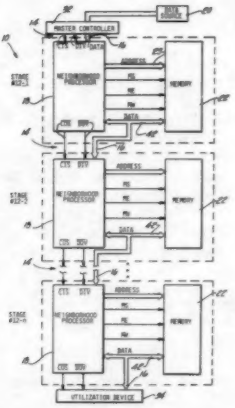
OFF-IMAGE DETECTION CIRCUIT FOR AN IMAGE ANALYZER

William O. Dargel; Robert M. Lougheed; David L. McCubbrey, all of Ann Arbor, Mich., and Ralph E. Richardson, Eatontown, N.J., assignors to Environmental Research Institute of Michigan, Ann Arbor, Mich.

Filed Aug. 15, 1980, Ser. No. 178,314

Int. Cl.³ G06K *9/36*

U.S. Cl. 382—41 **15 Claims**



1. In an image analyzer system having at least one neighborhood transformation stage for transforming serial scan lines of image pixel data according to the values of a center pixel and its surrounding pixels in a neighborhood window, some of the scan lines containing valid pixels therein representing characteristics of the image to be analyzed together with invalid pixels not representing image information, wherein the improvement comprises off image detection circuitry comprising:

storage means for storing the number of valid pixels in at least one scan line of the image as it is presented to the stage;

comparison means for comparing the number of valid pixels in subsequent scan lines presented to the stage with the number of valid pixels stored in the storage means, operative to provide an output signal; when the window contains invalid pixels and

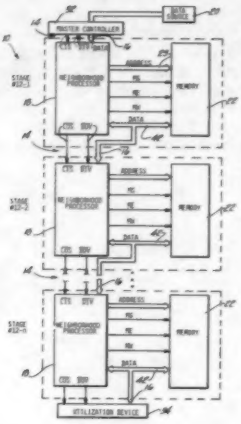
transformation control means for altering the transformation of the stage in response to the output of the comparison means whereby the accuracy of image analysis may be increased.

4,395,698

NEIGHBORHOOD TRANSFORMATION LOGIC CIRCUITRY FOR AN IMAGE ANALYZER SYSTEM

Stanley R. Sternberg; William O. Dargel; Robert M. Lougheed; David L. McCubbrey, all of Ann Arbor, Mich., and Ralph E. Richardson, Eatontown, N.J., assignors to Environmental Research Institute of Michigan, Ann Arbor, Mich.

Filed Aug. 15, 1980, Ser. No. 178,312
Int. Cl.³ G06K 9/00; G06F 15/20
U.S. Cl. 382—27 22 Claims



1. In an image analyzer system having at least one neighborhood transformation stage including a plurality of neighborhood window storage registers for temporarily accessing substantially all of the neighborhoods of pixel values in the image, wherein the improvement comprises a neighborhood transformation stage which can provide a wide variety of image analyses, said stage including:

adder means having at least two inputs and an output, operative to provide at its output the sum of the two values applied to its inputs;

means for connecting said neighborhood window registers to one input of said adder means;

means for applying a contribution value to the other input of said adder means;

zero detector means for detecting a zero output of said adder means; and

maximum value detection means coupled to said adder means output for detecting the maximum value generated at said adder means output for the pixel values contained in said neighborhood window registers.

4,395,699

METHOD AND APPARATUS FOR PATTERN RECOGNITION AND DETECTION

Stanley R. Sternberg, Ann Arbor, Mich., assignor to Environmental Research Institute of Michigan, Ann Arbor, Mich.

Division of Ser. No. 73,818, Sep. 10, 1979, Pat. No. 4,322,716, which is a continuation-in-part of Ser. No. 742,127, Nov. 15, 1976, Pat. No. 4,167,728, and a continuation-in-part of Ser. No. 919,171, Jun. 26, 1978, Pat. No. 4,174,514. This application May 29, 1981, Ser. No. 268,607
Int. Cl.³ G06K 9/00; G06F 15/20
U.S. Cl. 382—41 17 Claims

1. A neighborhood transformation circuit stage for analyzing an image represented by a serial stream of digital data signals corresponding to a matrix of points constituting the image, said stage circuitry comprising:

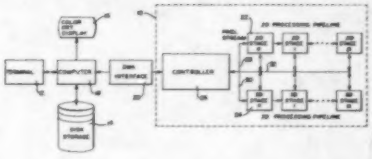
a data input for receiving said stream of digital data signals;

neighborhood extraction means including a plurality of digital storage devices for temporarily storing digital signals associated with a neighborhood in the matrix comprised of a central data point and its surrounding points in the matrix;

means for loading the signals into the storage devices to sequentially access substantially all of the neighborhoods in the matrix;

neighborhood configuration detector means for detecting a particular configuration of data signals having given values in each extracted neighborhood and providing a given output signal when the particular configuration is detected;

center detection means coupled to the storage device in the neighborhood extraction means containing the central data point, operative to provide a given output signal when a data signal having particular values for the central data point is contained therein;



comparison means having a plurality of inputs coupled to the outputs of said neighborhood configuration detector means and said center detection means, operative to provide an output signal upon receipt of both of said given signals; and

multiplexor means having at least two inputs and a control input for selectively coupling one of the inputs to its output, one of said inputs being coupled to the storage device in the neighborhood extraction means containing the central data point, the other input being coupled to a value generator means for providing a signal of a selected value, with said control input being coupled to the output of the comparison means such that the output of said multiplexor means provides the transformation output for the stage and is dependent upon the output of said comparison means.

4,395,700

IMAGE ANALYZER WITH VARIABLE LINE STORAGE

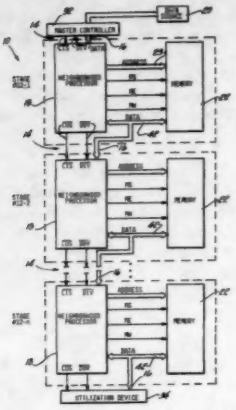
David L. McCubbrey, Ann Arbor, Mich., and Ralph E. Richardson, Eatontown, N.J., assignors to Environmental Research Institute of Michigan, Ann Arbor, Mich.

Filed Aug. 15, 1980, Ser. No. 178,313
Int. Cl.³ G06K 9/00, 15/20
U.S. Cl. 382—27 10 Claims

1. A system for analyzing images represented by a plurality of raster scan lines of pixel values, said system comprising:

at least one neighborhood transformation stage, each stage including a processor portion for analyzing windows of neighboring pixel values in a matrix of pixels representing an image and providing a transformation output as a function of the pixel values contained in the window, a memory portion including a single random access memory (RAM) for repetitively storing a given plurality of successive scan lines of pixels fed to the stage, and means for sequentially loading said processor portion with selected pixel values from said RAM in a periodic fashion to se-

quentially access substantially all of the neighborhood windows in the image matrix for analysis whereby said



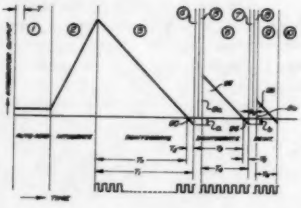
RAM serves as a recirculating line storage device for accommodating different raster scan line lengths.

4,395,701

HIGH SPEED INTEGRATING ANALOG-TO-DIGITAL CONVERTER

Lee L. Evans, Atherton, Calif., assignor to Intersil, Inc., Cupertino, Calif.

Filed Mar. 25, 1980, Ser. No. 134,153
Int. Cl.³ H03K *13/02*
U.S. Cl. 340—347 NT **16 Claims**



1. An integrating analog-to-digital converter for converting an unknown analog input signal to a digital value, comprising:

an integrator;

multiplication means for multiplying the output of the integrator by a predetermined amount;

storage means for storing the output of the multiplication means;

comparison means for selectively comparing the output of the integrator with the output of the multiplication means and storage means;

a feedback loop for coupling the output of the comparison means to the input of the integrator to thereby cause the integrator output to assume a value equal to the value of the output of the comparison means;

switching means for selectively coupling the outputs of the multiplication means and storage means to the comparison means, for selectively closing the feedback loop and for controlling the operation of the integrator; and

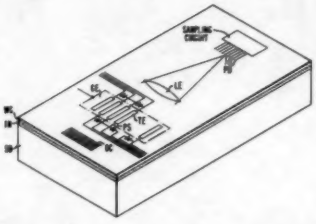
digital means, coupled to the output of the comparison means, for controlling the switching means to (a) cause the unknown analog input signal to be integrated by the integrator for a predetermined time period, (b) cause the integrator to be deintegrated for a first time period until a zero crossing of its output is detected, (c) cause the integrator output to assume a value equal to the value of the output of the multiplication means at the end of the first time period, (d) causes the integrator to be deintegrated for a second time period until its output is zero, said digital means also for measuring said deintegration time periods and providing a digital output as a function thereof.

4,395,702

BULK ACOUSTIC WAVE INTEGRATED OPTICAL DEFLECTOR AND MONOLITHIC A/D CONVERTER USING SUCH DEFLECTOR

Milton Gottlieb, Pittsburgh, and Gerald B. Brandt, Edgewood Borough, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Division of Ser. No. 82,513, Oct. 9, 1979, Pat. No. 4,348,075.
This application Jun. 12, 1981, Ser. No. 273,177
Int. Cl.³ H03K *13/02*
U.S. Cl. 340—347 AD **3 Claims**



1. A monolithic optical analog-to-digital (A/D) converter comprising:

a common substrate having a general direction and a surface plane;

an optical waveguide formed on said substrate in said phase and along said surface adapted for passing guided light therethrough;

an array of ultrasonic transducer elements integrated with said optical waveguide in a zone of acoustic interaction therewith across said general direction for generating bulk acoustic waves normally of said optical waveguide in said zone and for interaction with the guided light;

phase shifter means integrated with said optical waveguide and associated with said transducer elements for introducing cummulative phase shifts of identical relative magnitude between consecutive transducer elements of said array thereby to cause deflection of the guided light;

said phase shifter means being controlled by an analog signal to establish a deflection angle for said guided light in relation to the magnitude thereof;

an array of photo-detecting devices integrated with said waveguide for receiving guided light deflected by said phase shifter devices; and

means responsive to said photo-detecting devices for generating a digital signal in relation to said deflection angle and said analog signal.

4,395,703

PRECISION DIGITAL RANDOM DATA GENERATOR

Gerald V. Plosenka, Scottsdale, Ariz., assignor to Motorola Inc., Schaumburg, Ill.

Filed Jun. 29, 1981, Ser. No. 278,261
Int. Cl.³ H03K *13/02*
U.S. Cl. 340—347 AD **4 Claims**

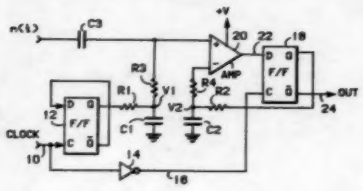
1. An electronic circuit for amplifying and synchronizing a random analog input noise signal having a statistical characteristic to produce a useful random data digital signal, the digital

signal having statistical characteristics essentially the same as the characteristics of the random analog signal, the circuit comprising:

a system clock signal input;

first integrator means connected to said input for generating a first integrated signal from a system clock signal applied to said input;

a second integrator means connected to said input for generating a second integrated signal utilizing the system clock



signal and for generating the random data digital signal at an output thereof;

both integrator means being clocked at the same rate;

means for comparing said first and second integrated signals and for generating an output of said comparing means responsive to said comparison, said output of said comparing means being a second input of said second bias means; and

means for applying a time varying noise signal in superposition with said first integrated signal.

4,395,704

INPUT DEVICE FOR ELECTRONIC APPARATUS

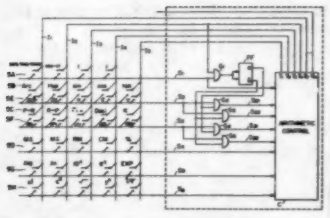
Juji Kishimoto; Ichiro Sado, both of Tokyo, and Mitsuo Cho, Ina, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 82,536, Oct. 9, 1979, abandoned. This application Sep. 21, 1981, Ser. No. 304,311

Claims priority, application Japan, Oct. 14, 1978, 53-125716

Int. Cl.³ G08C 9/00; G06F 13/00

U.S. Cl. 340—365 S **2 Claims**



1. An input device for electronic apparatus comprising:

a first plurality of spaced keys each for producing a signal;

a first key signal line to which each of said first keys is coupled for conducting a signal therefrom;

a plurality of first AND gate means each of which is coupled to said first key signal line; and

setting means for selecting any one of said plurality of said first AND gate means to transmit signals produced by only a portion of said keys, said setting means including memory means, a manual switch, a second key signal line, and second AND gate means for changing the output status of said memory means to select a different one of said first AND gate means to transmit signals produced by a different portion of said keys, an output of said second AND gate means being coupled to the input of said memory means, and an input of said second AND gate means being coupled to said manual switch by said second key signal line.

4,395,705

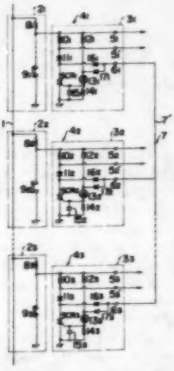
TROUBLE-SHOOTING CIRCUIT WITH FIRST-FAILURE IDENTIFICATION CAPABILITY

Kazuhiro Tsutsumi; Genichiro Tanoue, and Yoshiaki Takaya, all of Tokyo, Japan, assignors to Toyo Electronics Corporation, Tokyo, Japan

Filed Mar. 3, 1981, Ser. No. 240,215

Int. Cl.³ G08B 23/00

U.S. Cl. 340—520 **4 Claims**



1. A trouble detecting and localization circuit apparatus for identifying a first failure or trouble in time in a sequence of failures or troubles, comprising a plurality of monitor circuit means (4_1, 4_2) having trouble detector means (2_1, 2_2), with contacts (9_1, 9_2) for producing direct current outputs in response to the occurence of trouble at said contacts (9_1, 9_2), and trouble localization circuit means (3_1, 3_2), and a connecting line operatively coupling said trouble detector means to said trouble localization circuit means, each of said monitor circuit means consisting of:

(a) first and second output terminals (5_1, $5_1'$; 5_2, $5_2'$) with a first resistor (10_1, 10_2), a first diode (11_1, 11_2) and a silicon controlled rectifier with a gate, anode and cathode, said first resistor, said first diode and said anode and cathode of said silicon controlled rectifier being connected in series with each other between said first output terminal and ground;

(b) a second resistor having one end connected to the first output terminal; a constant voltage diode having its cathode connected to the other end of the second resistor and its anode connected to the gate of said silicon controlled rectifier;

(c) delay circuit means (15_1, 15_2) connected between said gate and ground;

(d) a lock signal terminal (6_1, 6_2) and a second diode (16_1, 16_2), said lock signal terminal being connected through said second diode to a point between said first diode and the anode of said controlled rectifier;

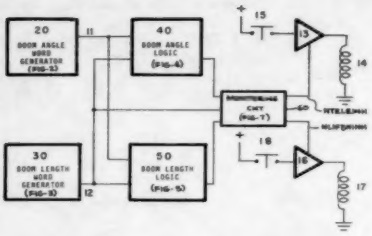
(e) a third diode (17_1, 17_2) connected between the second resistor (12_1, 12_2) and the cathode of said constant voltage diode to the lock signal terminals, and said lock signal terminals (6_1, 6_2) being interconnected each to the other; and,

(f) an alarm circuit means connected between the first and second output terminals of each of said monitor circuit means.

4,395,706
BOOM LIMIT SAFETY CONTROL CIRCUIT

Eugene L. Garber, McConnellsburg, Pa., assignor to JLG Industries, Inc., McConnellsburg, Pa.

Continuation-in-part of Ser. No. 164,281, Jun. 30, 1980, abandoned. This application Jan. 7, 1981, Ser. No. 223,898
Int. Cl.³ B66C *15/06*; G08B *21/00*
U.S. Cl. 340—685 **13 Claims**



1. An extensible boom safety control circuit comprising:

a. means for generating a coded boom angle word representing the boom angle of elevation comprising a voltage divider network including a pendulum potentiometer having a plurality of sequential swept contacts for providing discrete voltage levels representing boom angles; and electrical contact means for contacting said swept contacts of said pendulum potentiometer; an electrical bus connected to said electrical contact means; a plurality of voltage comparators connected in parallel to said electrical bus for producing a parallel, coded word representing boom angle; and a plurality of voltage dividers for providing reference potentials for said plurality of comparators;

b. means for generating a coded boom length word representing boom length, comprising a plurality of microswitches connected in parallel and means responsive to boom length for actuating said microswitches in a mutually exclusive fashion;

c. boom angle logic means responsive to said boom angle word and said boom length word for generating a boom extension control signal, wherein said boom angle logic means comprises a plurality of 3-input NAND gates each of which includes a first input electrically connected to one of said comparators, a second input electrically connected via an inverter to a different one of said comparators, and a third input electrically connected to one of said microswitches, and an inhibit function NAND gate including an input for each of said 3-input NAND gates, said 3-input NAND gates each connected to one of said inputs; and

d. boom length logic means responsive to said boom length word and said boom angle word for generating a boom lowering control signal;

e. boom extension inhibit means responsive to said boom extension control signal for preventing boom extension; and

f. boom down inhibit means responsive to said boom lowering control signal for preventing boom lowering.

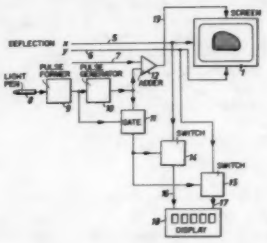
4,395,707
LIGHT PEN CONTROLLED METHOD AND EQUIPMENT FOR EVALUATING FLUORESCENT SCREEN PICTURES

Jaroslav Satrapa, Timelkam, Austria, assignor to Kretztechnik Gesellschaft m.b.H., Zipf, Austria

Filed Dec. 31, 1979, Ser. No. 108,647
Claims priority, application Austria, Jan. 31, 1979, 694/79
Int. Cl.³ G09G *1/28*
U.S. Cl. 340—703 **10 Claims**

1. In a method of marking and evaluating or measuring successive pictures displayed on a fluorescent screen by an electron beam scanning the screen, by means of a light pen, the light pen having an operative position directing a receiving optical system towards screen areas brightened by the electron beam and transducing the light received by the optical system from the brightened screen areas to generate bright-up control pulses for intensifying the electron beam whereby a light spot appears in an area of the screen towards which the light pen optical system is directed, the steps of

(a) generating target pulses in response to the bright-up control pulses, the target pulses causing the display of



(1) a light spot forming a pilot area for the light pen on the screen, the pilot area being about one percent of the area of the screen, and

(2) a sharply defined target mark having coordinates determining a predetermined geometrical relation of the target mark outside and adjacent the pilot area,

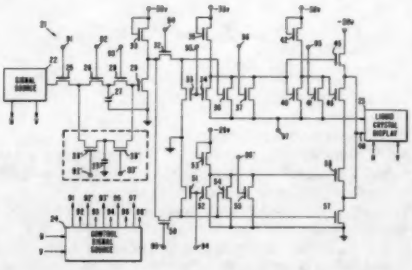
(b) ascertaining the coordinates of the target mark on the basis of the instantaneous deflecting voltage of the electron beam, and

(c) using the ascertained coordinates of the target mark to measure distances between points, the periphery or the area of the pictures.

4,395,708
SAMPLING AND LEVEL SHIFTING APPARATUS TO OPERATE IN CONJUNCTION WITH A LIQUID CRYSTAL DISPLAY FOR CONVERTING DC ANALOG DRIVE SIGNALS TO AC SIGNALS

Randahl B. Lloyd, San Marcos, Calif., assignor to Hughes Aircraft Company, El Segundo, Calif.

Filed Dec. 22, 1980, Ser. No. 219,162
Int. Cl.³ G09G *3/36*
U.S. Cl. 340—784 **1 Claim**



1. Apparatus for use with a liquid crystal display which provides alternating current driving signals thereto derived from direct current analog signals, said apparatus comprising:

first means for sampling and storing said applied analog signals in response to first predetermined control signals applied thereto;

second means coupled to said first means for transferring said stored analog signals in response to second predetermined control signals;

third means coupled to said second means for level shifting said analog signals applied thereto into a first predetermined range associated with said liquid crystal display during a first field time; and

fourth means coupled to said second means for level shifting said analog signals applied thereto into a second predetermined range associated with said liquid crystal display, said first and second ranges being symmetrically disposed about a predetermined reference level of said liquid crystal display, said level shifted signals in said second range being of opposite polarity from said level shifted signals of said first range.

4,395,709

DRIVING DEVICE AND METHOD FOR MATRIX-TYPE DISPLAY PANEL USING GUEST-HOST TYPE PHASE TRANSITION LIQUID CRYSTAL

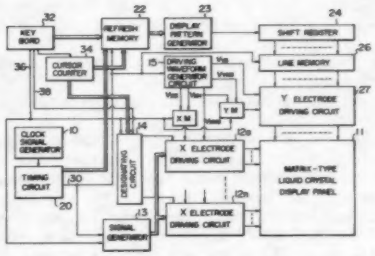
Yoshiharu Nagae; Masaaki Kitajima, both of Hitachi, and Hideaki Kawakami, Mito, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 29, 1981, Ser. No. 258,625

Claims priority, application Japan, May 2, 1980, 55/57837

Int. Cl.³ G09F 9/32

U.S. Cl. 340—784 **6 Claims**



1. An apparatus for driving a guest-host phase transition liquid crystal in matrix comprising:

(a) a plurality of liquid crystal display elements including a guest-host liquid crystal with a pleochroic dye added to one of the cholesteric-nematic liquid crystal and the chiralnematic phase transition liquid crystal, said liquid crystal display elements being driven by X and Y electrodes arranged in matrix,

(b) a circuit generating a rectangular wave clock signal,

(c) a drive waveform generator circuit for generating in synchronism with said rectangular wave clock signal an X electrode non-selecting voltage and an X electrode selecting voltage to be applied to said X electrodes and a Y electrode non-selecting voltage and a Y electrode selecting voltage to be applied to said Y electrodes, in order to supply each liquid crystal cell of said liquid crystal display elements with selected one of a holding voltage for holding the display condition and a write-in voltage for new writing operation, said drive waveform generator circuit further generating in synchronism with said rectangular wave clock signal an erasure holding voltage to be applied to one of said X and Y electrodes, said holding voltage being selected to be applied to the liquid crystal cells other than those liquid crystal cells to be erased when substantially the same waveform voltage is applied to the X and Y electrodes corresponding to the liquid crystal cells to be erased, in order to apply an erasure voltage to each liquid crystal cell positioned at the parts to be erased,

(d) an X electrode driving circuit for supplying each of said X electrodes of said liquid crystal display elements with at least the X electrode non-selecting voltage and the X electrode selecting voltage selectively amoung the drive waveform voltages derived from said drive waveform generator circuit,

(e) a Y electrode driving circuit for supplying each of said Y electrodes of said liquid crystal display elements with at least the Y electrode non-selecting voltage and the Y electrode selecting voltage selectively among the drive waveform voltages derived from said drive waveform generator circuit,

(f) a change-over circuit for enabling the X electrode non-selecting voltage and the X electrode selecting voltage to be applied to said X electrode drive circuit and the Y electrode non-selecting voltage and the Y electrode selecting voltage to be applied to said Y electrode drive circuit at the time of execution of the writing operation, at least said X and Y electrode drive circuits being supplied with substantially the same waveform voltage while applying said erasure holding voltage to one of said X and Y drive circuits at the time of execution of the partial erasure,

(g) a designating circuit for designating a region in the display panel of said liquid crystal display elements, where one of said write-in and partial erasure is to be executed, and

(h) a control signal generator circuit for supplying a control signal to said X electrode drive circuit and said Y electrode drive circuit in such a manner that a write-in voltage is supplied to the liquid crystal cells to be written in the region designated by said designating circuit and a holding voltage is supplied to the other liquid crystal cells at the time of execution of the write-in operation, an erasure voltage being applied to the liquid crystal cells in the region designated by said designating circuit and a holding voltage being applied to the other liquid crystal cells at the time of execution of said partial erasure.

4,395,710

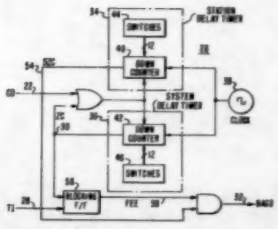
BUS ACCESS CIRCUIT FOR HIGH SPEED DIGITAL DATA COMMUNICATION

Charles W. Einolf, Jr.; Andras I. Szabo, both of Murrysville, and Albert W. Crew, Pittsburgh, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 26, 1980, Ser. No. 210,700

Int. Cl.³ H04Q 9/00; H04J 3/00

U.S. Cl. 340—825.5 **6 Claims**



1. In a digital communication system, a serial data communications network comprising:

a plurality of sections;

a serial data communications bus to which each of said stations is interfaced and through which each of said stations communicates to every other of said stations; and

a plurality of circuit means, each in communication with one of said stations, for controlling orderly and collision-free access by said station to said serial bus for transmission thereon, each circuit means comprising:

first means for monitoring said bus for transmission inactivity over a preassigned first time period which is substan-

tially common to all of the stations of said plurality, said first means including means for reinitializing its monitoring time upon detection of bus transmission activity within said first time period and for repeating monitoring of said bus over another first time period upon detection of transmission inactivity throughout a first time period, said first means further including means for generating a first signal upon initiation of each repeat of a monitoring operation;

second means for monitoring said bus for transmission inactivity over a preassigned second time period, each circuit means corresponding to a station of said plurality being preassigned a unique second time period, said second means including means for reinitializing its monitoring time upon detection of bus transmission activity within said second time period and for generating a second signal upon detection of transmission inactivity throughout said second time period, said second means further including means for repeating monitoring said bus over another second time period concurrent with said repeat of monitoring operation of said first means;

means governed by said second signal to conditionally generate a third signal to permit said corresponding station exclusive transmission access to said bus, whereby collision-free access by each corresponding station to said bus is achieved;

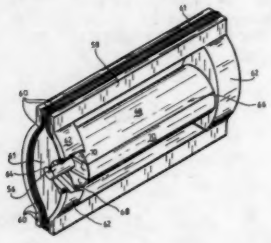
means for enabling said generating means to generate said third signal in accordance with said first signal generation; and

means for disabling said generating means to prevent generation of said third signal upon transmission activity of said corresponding station and for maintaining disablement thereof after said transmission until enabled by said enabling means, whereby an orderly access to said bus by each corresponding station is achieved.

4,395,711
INDUCTIVE SENSOR

Frank L. Ward, Exeter, N.H., assignor to Clarostat Mfg. Co., Inc., Dover, N.H.

Division of Ser. No. 137,994, Apr. 7, 1980, abandoned. This application Jul. 2, 1981, Ser. No. 280,067
Int. Cl.³ G08C *19/06, 19/12*; G01B *7/14*
U.S. Cl. 340—870.31 **3 Claims**

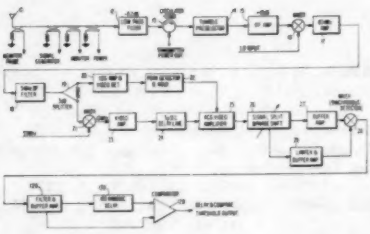


1. A sensor which converts the rotational displacement of an object into an electrical signal for monitoring said displacement, said sensor having: a housing; a coil having a center axis through which flux lines from said coil pass when an electric current is applied thereto; the coil being wound about said housing; a rotational element axially positioned in said housing and disposed with its axis of rotation transverse to the center axis of the coil; the rotational element being adapted to receive a rotationally displacing force from said object; said rotational element being comprised of alternate portions of conductive material and magnetic material which transverse the cnter axis of the coil with sufficient portions to allow the variable concentration of flux lines through the center axis; wherein the induction of the coil is variable as a function of the rotation of said element in said coil which rotates alternately the portions of magnetic material and conductive material so that flux lines are established and then shorted so as to vary the induction of the coil gradually and cyclically between a minimum and maximum and a monitoring of which indicates the displacement of said object.

4,395,712
LINEAR DETECTION OF A DME SIGNAL

Edward J. O'Hare, Coral Springs, Fla., assignor to General Signal Corp., Stamford, Conn.

Filed Jan. 27, 1981, Ser. No. 228,840
Int. Cl.³ G01S *7/32*
U.S. Cl. 343—7.3 **5 Claims**



1. A DME receiver, responsive to an RF input signal for generating a linear baseband replica of said RF input for distance determining purposes, including:

a first mixer, coupled to said RF input signal, and to a local oscillator signal,

an IF amplifier and bandpass filter, serially connected to said first mixer,

a second mixer with two inputs and an output, and,

signal processing means with two outputs coupled between said bandpass filter and said second mixer for processing a signal from said bandpass filter to generate a first output signal and a second output signal comprising a hard limited version of said RF input signal, said signal processing means including phase shift means for phase adjusting said second output signal relative to said first output signal, said phase shift means comprising an active circuit element with an input and two outputs, variable reactive circuit means coupled between said two outputs, said two outputs of said active circuit element providing said first and second output signals, respectively,

whereby with the relative phases of said first and second output signals adjusted, said second mixer produces, at baseband, a linear replica of said RF input signal.

4,395,713
TRANSIT ANTENNA

Thomas E. Nelson, Thompson, and Herbert A. Consor, Chagrin Falls, both of Ohio, assignors to Antenna, Incorporated, Cleveland, Ohio

Continuation of Ser. No. 147,216, May 6, 1980, abandoned. This application Nov. 16, 1981, Ser. No. 321,556
Int. Cl.³ H01Q *1/32*
U.S. Cl. 343—713 **6 Claims**

1. A mobile communication antenna comprising:

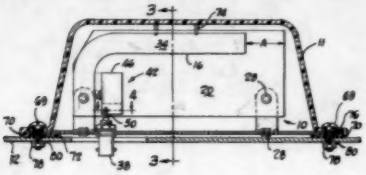
(a) a base at least a portion of which is conductive and adapted to be connected to an associated vehicle for grounding;

(b) an antenna substrate fixed to the base in spaced relationship, the substrate being a relatively thin body of insulating material with its major dimensions positioned longitudinally and transversely of the base;

(c) a housing connected to the base and together with the base defining a protected chamber in which the substrate is positioned, the housing and substrate including inter-

connected portions which coact to assist in maintaining the substrate in fixed spaced relationship with the base;

(d) two generally L shaped conductive antenna surfaces secured to opposed faces of the substrate;



(e) an electrical connector secured to the base in grounding connection with the conductive portion; and

(f) an antenna lead extending through the connector and capacitively connected to at least one of the conductive antenna surfaces.

4,395,714

ANTENNA ARRAY SYSTEM USABLE FOR AM/FM RECEIVER

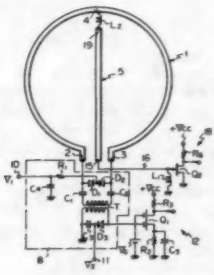
Shigeki Takeda; Junichi Shibata; Masashi Shimakata; Yasuhiro Oshime, all of Tokorozawa; Shintaro Gomi, and Katsuaki Kawamura, both of Kawagoe, all of Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Mar. 3, 1981, Ser. No. 241,459

Claims priority, application Japan, Mar. 3, 1980, 55-27315

Int. Cl.³ H01Q *21/00*

U.S. Cl. 343—725 **14 Claims**



1. An antenna array system comprising at least one loop antenna having an electric neutral point and two output terminals positioned closely to each other, at least one rod antenna having one end terminal thereof electrically coupled with the electric neutral point of said loop antenna and the other end thereof positioned closely to the end terminals of said loop antenna, first means connected to the output end terminals of said loop antenna, for picking up a first frequency wave signal caught by said loop antenna, and second means connected to the other end of said rod antenna, for picking up a second frequency wave signal caught by said rod antenna and being different in frequency from said first frequency wave signal, said first means including balanced variable reactance circuit connected to the output terminals of said loop antenna and having a reactance variable with a first control dc voltage; and first voltage supply means for supplying said first control dc voltage via said rod antenna and said loop antenna to said variable reactance circuit.

4,395,715

METHOD AND ARRANGEMENT FOR CONTROLLING THE PRINT CURRENT IN METAL PAPER PRINTERS

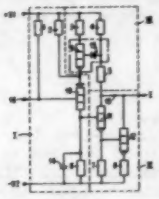
Dietrich J. Bahr, Herrenberg, and Gottfried A. Goldrian, Böblingen, both of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 27, 1981, Ser. No. 296,662

Claims priority, application Fed. Rep. of Germany, Sep. 20, 1980, 80105659

Int. Cl.³ G06K *15/10*; B41J *3/10*

U.S. Cl. 346—1.1 **13 Claims**



1. A circuit for controlling the current supplied to an electrode for marking metal coated recording paper comprising:

means connected to said electrode for supplying arcing current thereof; and

control means connected to said supply means and the junction of said electrode and said recording paper for varying the arcing current through said supply means in response to the voltage level at said junction.

4,395,716

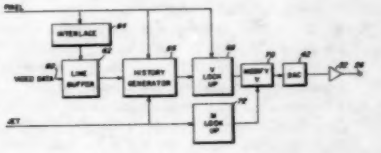
BIPOLAR INK JET METHOD AND APPARATUS

Peter A. Crean, Penfield, N.Y.; John M. Schneider, Spring Valley, Ohio, and Anthony F. Lipani, Webster, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 27, 1981, Ser. No. 296,922

Int. Cl.³ G01D *18/00*, *15/18*

U.S. Cl. 346—1.1 **4 Claims**



4. A process in ink jet recording wherein a series of ink droplets are directed to controlled locations on a record medium, said process comprising the steps of:

directing a number of ink columns defining an ink jet array toward said medium, ink in said columns having a controlled speed of movement toward said medium;

perturbing said ink to cause said columns to break off into droplets at a desired distance from said record medium;

charging each droplet either positively or negatively to a particular magnitude related to a desired subsequent trajectory for said droplet;

generating a uniform electric field for each column to cause droplets from each of said columns to be deflected as the droplets pass therethrough in accordance with each droplet's charge magnitude and polarity said uniform electric field being generated between a series of pairs of parallel aligned electrodes when the electrode pairs are separated by appropriate voltage, one pair of electrodes being provided for each column of droplets and each pair having confronting field generating surfaces substantially parallel to an initial direction of ink droplet travel, one electrode of each pair of electrodes in said series of pairs being

grounded so that alternating adjacent electrodes throughout the series of pairs of electrodes are grounded and wherein the non-grounded electrodes are maintained at said appropriate voltage so the uniform electric field is slightly less than the breakdown field strength of air;

directing the charged droplets of each column toward the midpoint between confronting field generating surfaces of its associated pair of electrodes; and

determining the magnitude and polarity of droplets from a particular column chosen so as to interlace successive droplets thereby separating said charges to diminish electrostatic interaction between successive ink droplets.

4,395,717

INK JET RECORDING APPARATUS

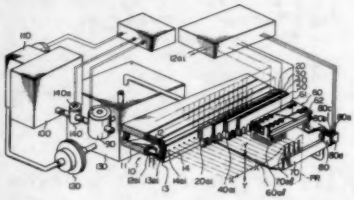
Masanori Horike, and Yutaka Ebi, both of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Mar. 2, 1981, Ser. No. 239,278

Claims priority, application Japan, Mar. 7, 1980, 55-28780; Mar. 7, 1980, 55-28781

Int. Cl.³ G01D *18/00*

U.S. Cl. 346—75 **17 Claims**



1. An ink jet recording apparatus including an ink ejection head having a plurality of nozzles each for ejecting a jet of ink, charging means for electrostatically charging the ink jet, and deflecting means for electrostatically deflecting the charged ink jet, characterized by comprising:

reference charging voltage detecting means for detecting a reference charging voltage (Vc_1) applied to the ink jet which is deflected by the deflecting means so as to reach a predetermined deflection position (Xd_1);

first computing means for computing a coefficient (K_1) from the relationship between the reference charging voltage (Vc_1) and the predetermined deflection position (Xd_1) which is defined by an equation of $Vc_1=K_1Xd_1$;

second computing means for computing charging voltages (Vc_i) applied to the ink jet deflected by the deflecting means so as to reach deflection positions (Xd_i) from an equation of $Vc_i=K_1Xd_i$ where i is the number of the steps of deflection; and

control means for controlling the charging means to electrostatically charge the ink jet in accordance with the computed charging voltages (Vc_i).

4,395,718

THERMAL TRANSFER RECORDING MEDIUM

Tomio Murayama; Yoshiki Kikuchi; Haruhiko Moriguchi; Takashi Ohmori, and Fujio Moriguchi, all of Ebina, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

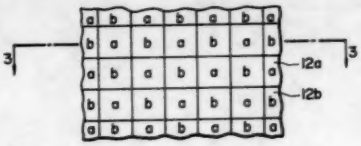
Filed Sep. 17, 1981, Ser. No. 303,270

Claims priority, application Japan, Sep. 18, 1980, 55-128533

Int. Cl.³ G01D *15/10*

U.S. Cl. 346—135.1 **8 Claims**

6. A thermal recording medium of the type having at least one layer of thermo sensitive ink having a transfer surface for contacting and transferring ink to a recording sheet or the like, said layer comprising at least two kinds of different thermo sensitive inks having different colors and different respective



melting points, said two kinds of thermo sensitive inks being exposed at different respective regions of said transfer surface.

4,395,719

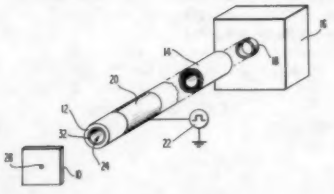
INK JET APPARATUS WITH A FLEXIBLE PIEZOELECTRIC MEMBER AND METHOD OF OPERATING SAME

Henry A. Majewski, Brookfield; William Salmre, Norwalk, and R. Hugh Van Brimer, Southbury, all of Conn., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Jan. 5, 1981, Ser. No. 222,573

Int. Cl.³ G01D *15/16*

U.S. Cl. 346—140 R **17 Claims**



1. An ink jet apparatus comprising:

an elastic tubular member forming, at least in part, a chamber for receiving ink, said tubular member comprising piezoelectric crystals substantially uniformly dispersed through said member and having electromechanical transducer properties;

an orifice in said chamber adapted to pass droplets of ink;

means for supplying ink to said chamber; and

means for relatively energizing said tubular member so as to contract and expand said chamber, said orifice projecting droplets outwardly therefrom when said chamber contracts.

4,395,720

CONFIGURATIONAL REDUCTION OF PULSE EJECTOR CROSSTALK

Joel W. Grover, Rochester, N.Y., and Kenneth H. Fischbeck, Dallas, Tex., assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 29, 1981, Ser. No. 306,794

Int. Cl.³ G01D *15/18*

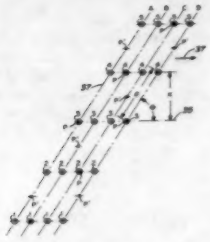
U.S. Cl. 346—140 R **3 Claims**

1. A method of minimizing crosstalk between transducer driven pulsed liquid droplet ejectors in an ejector array comprising:

(a) providing a predetermined regularly spaced set of potential pixel locations on a predetermined line of printing;

(b) providing an array of regularly spaced pulsed liquid droplet ejectors in a row, said ejectors being spaced in said

array such that no two adjacent ejectors are aligned with said pixel locations at the same time; and



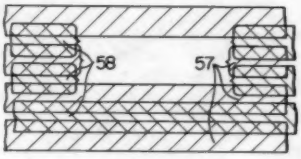
(c) addressing said pulsed liquid droplet ejectors only when said ejectors are aligned with a pixel location.

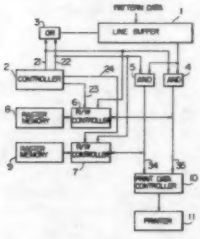
4,395,721

LASER BEAM PRINTER

Mitsuo Ohno, Hadano; Kikuo Hatazawa, Atsugi, and Akira Abe, Hadano, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 7, 1981, Ser. No. 261,669
Claims priority, application Japan, May 9, 1980, 55-60652
Int. Cl.³ G01D *15/00*; H04N *1/04*
U.S. Cl. 346—160 **4 Claims**





1. A laser beam printer in which a light sensitive member is scanned on a line base with a laser beam modulated with pattern data to be printed out, comprising:

first means for furnishing the pattern data on a single-line base;

second means receiving the pattern data from said first means for interposing synthesized data each between adjacent ones of said pattern data, said synthesized data being synthesized from the pattern data which preceedes to and succeed to said synthesized data, respectively; and

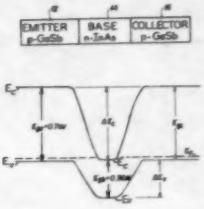
third means receiving the output from said second means for scanning said light-sensitive member with the laser beam modulated with the output from said second means on the line base so that adjacent lines as scanned are partially superposed on each other.

4,395,722

HETEROJUNCTION TRANSISTOR

Leo Esaki, Chappaqua, and Chin A. Chang, Peekskill, both of N.Y., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 21, 1980, Ser. No. 198,904
Int. Cl.³ H01L *29/88, 29/72*
U.S. Cl. 357—16 **11 Claims**



1. A high speed semiconductor device comprising:

first, second and third semiconductor regions of a binary alloy, said second region having a different alloy composition and conductivity type than said first and third regions, said second region being degenerately doped;

said second region located between said first and third regions, the interfaces between said first and second regions, and between said second and third regions being graded bandgap rectifying heterojunctions composed of a quaternary alloy semiconductor layer having the same alloy constituents as the adjacent regions;

each region having an energy band gap defined by conduction and valence band gap edges, said band gap of said first region being substantially larger than said band gap of said second region, said band gaps of said first and third regions being shifted in the same direction with respect to said band gap of said second region; and

one of the band gap edges of said first region being substantially coincident with one of the band gap edges of said second region, whereby said band gap in said second region forms a potential barrier to majority carriers in said first and second regions that is substantially smaller than the potential barriers formed by said band gap in said first and third regions.

4,395,723

FLOATING SUBSTRATE DYNAMIC RAM CELL WITH LOWER PUNCH-THROUGH MEANS

Eliyahou Harari, 2320 Friars La., Los Altos, Calif. 94022

Filed May 27, 1980, Ser. No. 153,252
Int. Cl.³ H01L *29/78*
U.S. Cl. 357—23 **5 Claims**

1. A semiconductor memory array comprising a plurality of cells and selected peripheral circuitry including sense amplifiers, formed in a semiconductor substrate of a first conductivity type, wherein each cell comprises:

a first charge storage means comprising a first region of a second conductivity type formed in said semiconductor substrate for the storage of charge representative of information;

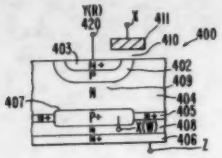
a second region of said first conductivity type formed in said first region;

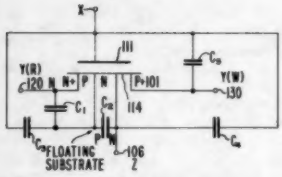
a third region of said second conductivity type formed in said substrate underneath and spaced from said first region;

means for forming a punch-through conductive path to said first region from said third region to control the charge stored in said first region in response to a first selected set of potentials applied to said substrate, said third region and said second region;

insulated gate means for forming a conductive channel from

said second region to said substrate through said first region in response to a second selected set of potentials applied to said substrate, said second region and said means for forming a conductive channel and





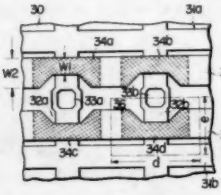
means for measuring the time rate of change of potential in said second region in response to said second set of potentials to indicate the information stored in said first region.

4,395,724

NONVOLATILE SEMICONDUCTOR MEMORY DEVICE

Hiroshi Iwahashi, Yokohama, and Masamichi Asano, Musashino, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Aug. 22, 1980, Ser. No. 180,435
Claims priority, application Japan, Aug. 31, 1979, 54-111111
Int. Cl.³ H01L *29/78, 27/02*
U.S. Cl. 357—23 VT **3 Claims**



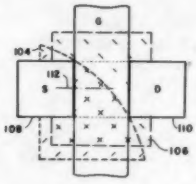
1. A nonvolatile semiconductor memory device, comprising:
a semiconductor substrate of a preselected conductivity type;
a drain region formed on said semiconductor substrate, said drain region having first and second oppositely disposed end portions and a contact hole substantially midway between said end portions;
first and second source regions formed on said semiconductor substrate adjacent but spaced apart from said first and second end portions of said drain region, respectively, by a predetermined distance;
first and second channel regions formed, respectively, between said first end of said drain region and said first source region, and between said second end of said drain region and said second source region;
a first gate insulation film overlying said first and second channel regions;
first and second floating gate electrodes formed on said first gate insulation film and overlying, respectively, said first and said second channel regions;
a second gate insulation film overlying said first and second floating gate electrodes; and
first and second control gate electrodes formed on said second gate insulating film and overlying entirely said first and second floating gate electrodes, respectively,
wherein the width dimension of each of said floating gate electrodes and said control gate electrodes is narrower at portions thereof located directed over said channel regions, than at portions thereof which are not located directly over said channel regions.

4,395,725

SEGMENTED CHANNEL FIELD EFFECT TRANSISTORS

Rajesh H. Parekh, 425 Gwinn Ct., San Jose, Calif. 95111

Filed Oct. 14, 1980, Ser. No. 196,384
Int. Cl.³ H01L *29/06, 29/78*
U.S. Cl. 357—23 **3 Claims**



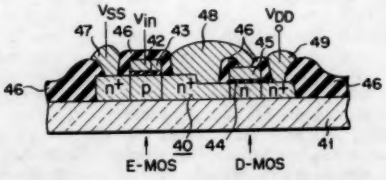
1. A segmented channel field effect transistor including a substrate, separated source and drain pockets adjoining one surface of said substrate, a current conduction channel bridging the separation between said source and drain pockets and having a length corresponding to said separation and a width corresponding to the widths of said source and drain pockets adjacent said conduction channel, and a gate element overlying said channel and electrically insulated therefrom, the current conduction channel of said transistor having therein a plurality of segments each implanted to conduct at a unique threshold voltage, at least one of said plurality of segments bridging the width of said channel adjacent one of said pockets and narrowing in width as said segment extends along the length of said channel.

4,395,726

SEMICONDUCTOR DEVICE OF SILICON ON SAPPHIRE STRUCTURE HAVING FETS WITH DIFFERENT THICKNESS POLYCRYSTALLINE SILICON FILMS

Kenji Maeguchi, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 27, 1980, Ser. No. 134,678
Claims priority, application Japan, Mar. 30, 1979, 54-36968
Int. Cl.³ H01L *27/02, 29/78*
U.S. Cl. 357—41 **2 Claims**



1. A semiconductor device including an insulating substrate,

a first silicon film on said substrate to form a depletion mode field effect transistor on said substrate, said first silicon film comprising a source, drain and channel of one conductivity type, a second silicon film on said substrate to form an enhancement mode field effect transistor formed on said substrate, said second silicon film comprising a source and drain of said one conductivity type and a channel of opposite conductivity type, with the source of said depletion mode transistor formed integral with the drain of said enhancement mode transistor, and with the thickness of said first silicon film which constitutes said depletion mode transistor being thinner than said second silicon film which constitutes said enhancement mode transistor.

4,395,727

BARRIER-FREE, LOW-RESISTANT ELECTRICAL CONTACT ON III-V SEMICONDUCTOR MATERIAL

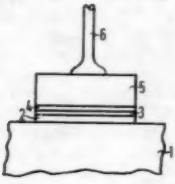
Christl Lauterbach, Ottobrunn, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Mar. 17, 1981, Ser. No. 244,723

Claims priority, application Fed. Rep. of Germany, Mar. 27, 1980, 3011952

Int. Cl.³ H01L *23/48, 23/54, 29/40, 29/54*

U.S. Cl. 357—71 **10 Claims**



1. A barrier-free, low-resistance contact structure for semiconductor components based on indium-containing III-V semiconductor material, comprising:

a plurality of layers positioned on one another in a layer sequence on a select area of said semiconductor component,

with a first layer of said sequence being in direct contact with said semiconductor material and consisting of indium;

with a second layer of said sequence being in direct contact with said first layer and being composed of a material having a p-doping effect in said semiconductor material;

with an uppermost layer of said sequence being composed of a metal available for external contact of said semiconductor component;

said layer sequence being subjected to a common thermal treatment; and

with a third layer being positioned in the layer sequence between said second layer and said uppermost layer, said third layer being composed of a material selected from the group consisting of platinum, palladium, chromium and a chromium-nickel alloy.

4,395,728

TEMPERATURE CONTROLLED APPARATUS

Chou H. Li, 379 Elm Dr., Roslyn, N.Y. 11576.

Continuation-in-part of Ser. No. 69,355, Aug. 24, 1979, abandoned. This application Aug. 13, 1981, Ser. No. 292,626

Int. Cl.³ H01L *25/04, 23/02, 23/12*

U.S. Cl. 357—82 **10 Claims**

1. A temperature-controlled apparatus for cooling, according to demand, a heat-sensitive device having two major surfaces thereon comprising:

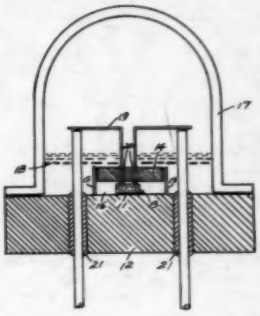
a heat-sinking substrate having a substrate contact area of a fixed shape and size on the contact side thereof which is in thermal and physical contact with one of the major surfaces, the thermal resistance through the substrate contact area decreasing with increasing contact pressure between the device and the substrate;

a heat-conductive disk having a disk contact area on one side thereof which is in thermal and physical contact with the other major surface;

a source of an evaporatable liquid in thermal contact with the other side of the disk and whose vapor pressure increases with the temperature of the liquid;

the heat from the device substantially instantaneously heating up the disk through heat conduction across tthe disk contact area to thereby evaporate the liquid and also increase the liquid vapor pressure on the other side of the disk;

a gas-tight and substantially rigid enclosure means enclosing at least the disk and part of the contact side of the substrate to allow the build-up of the vapor pressure of the liquid within the enclosure means;



means for preventing the vapor pressure from being applied to the one side of the disk which is in contact with the device;

the other side of the disk subjected to the liquid vapor pressure thereon being substantially greater than the substrate contact area contacting the device so that to balance the forces on the two sides of the disk the unit contact pressure between the device and the substrate must also be substantially greater than the liquid vapor pressure on the other side of the disk whereby increasing temperature on the device heats up the disk and the liquid to increase the vapor pressure on the other side of the disk and, simultaneously, to increase the contact pressure between the device and the substrate and thus to decrease the thermal resistance thereby allowing more effective heat removal from the device via heat conduction through the substrate at a time when more cooling of the device is needed, without constantly applying unnecessarily high and damaging pressure on the device.

4,395,729

DIGITAL VIDEO SIGNAL PROCESSING FILTERS WITH SIGNAL-TO-NOISE ENHANCEMENT

Henry G. Lewis, Jr., Hamilton Square, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 31, 1981, Ser. No. 298,255

Int. Cl.³ H04N *9/46, 5/21*

U.S. Cl. 358—21 R **4 Claims**

1. In a television receiver, including a source of digital video signals, a digital filter for processing said digital video signals comprising:

means for producing a clock signal in a timed relationship with said digital video signals;

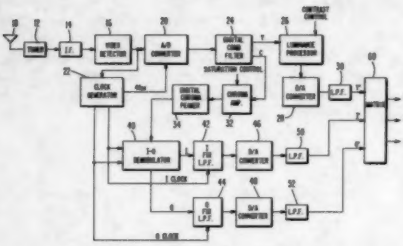
a serial shift register including a plurality of clocked shift register stages and having a first shift register stage cou-

pled to receive said digital video signals and a plurality of output taps emanating from ones of the stages of said register;

a plurality of weighting function circuits coupled to ones of said output taps for weighting signals applied thereto;

an adder tree arrangement, including a plurality of adders, and having inputs coupled to ones of said weighting function circuits and an output at which a filtered digital signal is produced;

a latch circuit having a signal input coupled to the output of said adder tree arrangement, an output, and a clock signal input;



a second latch circuit having a signal input coupled to the signal output of said first-named latch circuit, a signal output, and a clock signal input;

an adder having a first input coupled to the output of said first-named latch circuit, a second input coupled to the output of said second latch circuit, and an output at which averaged digital video signal samples are produced; and

means for applying said clock signal to said clocked shift register stages and said clock signal inputs of said latch circuit and said second latch circuit.

4,395,730

AUTOMATIC COLOR-TEMPERATURE COMPENSATION DEVICE

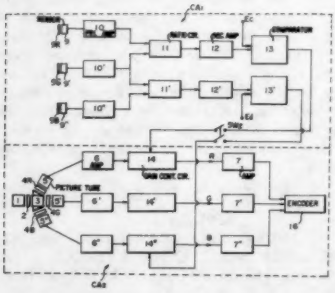
Chou-Ming Shen, 4F-2, No. 65, An Ho Rd., Taipei, Taiwan

Filed Oct. 23, 1981, Ser. No. 314,514

Claims priority, application Taiwan, May 26, 1981, 7023018

Int. Cl.³ H04N 9/535

U.S. Cl. 358—29 **5 Claims**



1. An automatic color temperature compensation device for electronic cameras, comprising:

(a) a first sensor having a first filter, said first filter adapted to pass a first color ray of light, said first sensor adapted to detect said first color ray and produce a first electrical signal in response to the detected first color ray;

(b) a second sensor having a second filter, said second filter adapted to pass a second color ray of light, said second sensor adapted to detect said second color ray and produce a second electrical signal in response to the detected second color ray;

(c) a third sensor having a third filter, said third filter adapted to pass a third color ray of light, said third sensor adapted to detect said third color ray and produce a third electrical signal in response to the detected third color ray;

(d) a first ratio circuit adapted to receive and compare the first and second electrical signals and to produce a first ratio output in response to the ratio difference between said first and second electrical signals;

(e) a second ratio circuit adapted to receive and compare the second and third electrical signals and to produce a second ratio output in response to the ratio difference between said second and third electrical signals;

(f) a first comparator to receive the first ratio output and compare it with a first reference voltage, and to produce a first control voltage in response to the difference between said ratio output and said first reference voltage;

(g) a second comparator to receive the second ratio output and compare it with a second reference voltage, and to produce a second control voltage in response to the difference between said second ratio output and said second reference voltage; and

(h) a camera means including:

a first signal means having a first filter for passing only red ray of light; a first pick-up tube capable of detecting the first color ray and producing a fourth electrical signal, a first gain controlling circuit adapted to adjust the gain of said fourth electrical signal; a second signal means having a second filter for passing a second color ray of light, a second pick-up tube capable of detecting the second color ray and producing a fifth electrical signal, and a second gain controlling circuit; and a third signal means having a third filter for passing a third color ray of light, a third pick-up tube capable of detecting the third color ray and producing a sixth electrical signal, a third gain controlling circuit adapted to adjust the gain of said sixth electrical signal;

said first comparator being electrically connected to said first gain controlling circuit through a first switch means such that said first control voltage is delivered to said first gain controlling circuit for adjusting the gain of said fourth electrical signal, and said second comparator is electrically connected to said third gain controlling circuit through a second switch means such that said second control voltage is delivered to said third gain controlling circuit for adjusting the gain of said sixth electrical signal.

4,395,731

TELEVISION MICROSCOPE SURGICAL METHOD AND APPARATUS THEREFOR

Arnold Schoolman, 8705 Catalina Dr., Prairie Village, Kans. 66207

Filed Oct. 16, 1981, Ser. No. 312,007

Int. Cl.³ H04N 9/54

U.S. Cl. 358—88 **12 Claims**

1. A method of selectively providing an individual a magnified view of an image of manual manipulation of the individual and images of other than the manual manipulation of the individual, the method comprising:

(a) viewing the manual manipulation by means of a video camera;

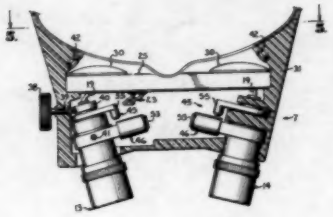
(b) generating electrical signals by a first signal generating means representing a first image of said manual manipulation;

(c) viewing a second image spaced from said manual manipulation by a second video camera;

(d) generating electrical signals representing the second image by a second signal generating means;

(e) positioning a viewing means in optical alignment with eyes of said individual;

(f) signal transmittingly connected said viewing means with said first and second signal generating means; and



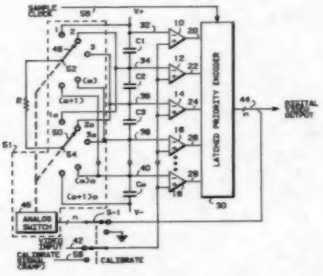
(g) selectively regenerating by a signal selection means one of said first or second images on said viewing screen.

4,395,732

STATISTICALLY ADAPTIVE ANALOG TO DIGITAL CONVERTER

Eric L. Upton, Mesa, Ariz., assignor to Motorola Inc., Schaumburg, Ill.

Filed Aug. 19, 1981, Ser. No. 294,273
Int. Cl.³ H04N 5/14
U.S. Cl. 358—169 **3 Claims**



1. In a system for contrast enhancement of digital video signals, the improvement comprising:

a series string of capacitors, said series string being connected to at least a pair of voltage sources and defining a plurality of nodes;

a plurality of comparator circuits having inputs connected to the nodes;

a priority encoder being connected to receive signals from the plurality of comparator circuits;

an analog switch having a controller connected to said encoder and dual poles, each of said dual poles having a fixed end and a plurality of fixed contacts placed at a plurality of throw positions, the fixed contacts of each of the dual poles being connected to different ones of said nodes so that the fixed ends of the dual poles have a different one of said capacitors connected therebetween in each of the throw positions, and each throw position of the dual poles being controlled by signals from said priority encoder supplied to the controller; and

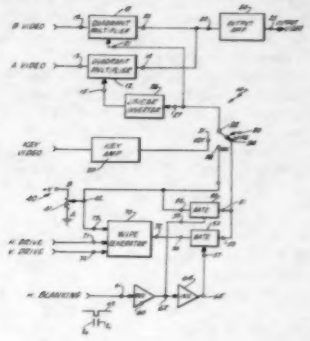
a resistor connected to the fixed ends of said dual poles.

4,395,733

TELEVISION SPECIAL EFFECTS CIRCUIT FOR WIPING VIDEO SIGNALS

William J. Elenbaas, 130 S. Pine St., McBain, Mich. 49657

Filed Jan. 26, 1981, Ser. No. 228,190
Int. Cl.³ H04N 5/21
U.S. Cl. 358—183 **5 Claims**



1. A special effects circuit for wiping from one composite video source to another composite video source comprising:

only two variable gain linear amplifiers each having an input terminal for receiving composite video signals including color burst signals to be wiped, said amplifiers further including control input terminals and output terminals;

circuit means for providing a wipe control signal applied to the control input terminals of said variable gain amplifiers to control the gain of the amplifiers during each blanking interval in proportion to the wiping action for mixing the color burst signals from the two sources and to control the variable gain amplifiers during the remaining portion of each scanning interval in the same proportion to provide video signals to said output terminals from one or the other video sources; and

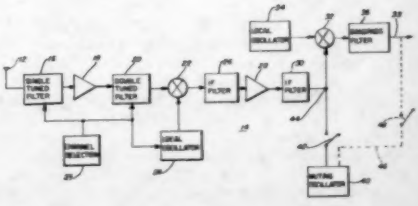
an output amplifier having an input terminal coupled to said output terminals of said variable gain amplifiers for mixing the signals from said variable gain amplifiers and including an output terminal for providing video output signals thereat.

4,395,734

REMOTE MUTING FOR CATV/STV CONVERTERS

Jouke N. Rypkema, Lombard, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.

Filed Apr. 24, 1981, Ser. No. 257,074
Int. Cl.³ H04N 7/16, 7/12
U.S. Cl. 358—194.1 **7 Claims**



3. A television signal frequency translating apparatus comprising:

means for receiving a television signal broadcast over a first RF frequency band and including a video component comprising a modulated RF video carrier and an audio

component comprising an RF sound carrier frequency modulated in accordance with a baseband audio signal;

means for translating the frequency spectrum of said received television signal from said first frequency band to a second RF frequency band;

means operable for generating a CW signal having a frequency substantially equal to the unmodulated frequency of said RF sound carrier in said second RF frequency band and having an amplitude substantially greater then the amplitude of said RF sound carrier in said second frequency band; and

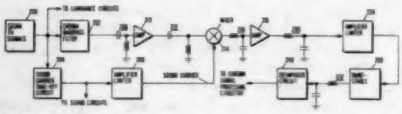
means disposed remotely from said television signal frequency translating apparatus for selectively operating said generating means for injecting said CW signal in said second RF frequency band for facilitating muting of said baseband audio signal without degrading the video component of said received television signal.

4,395,735

FM COUNTER DETECTOR

David D. Holmes, Chesterfield, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 31, 1981, Ser. No. 297,555
Int. Cl.³ H04N *5/62*
U.S. Cl. 358—198 **5 Claims**



1. In a SECAM television receiver, including means for producing frequency modulated chrominance subcarrier signals and an amplitude modulated sound carrier signal of a given frequency, a counter detector demodulation system comprising:

amplifier-limiter means, responsive to said sound carrier signal for producing a continuous wave reference signal at said given frequency of substantially constant amplitude;

a mixer having a first input coupled to receive said chrominance subcarrier signals, a second input coupled to receive said reference signals, and an output at which a difference frequency signal frequency modulated with chrominance information is produced;

means responsive to said difference frequency signal for producing a train of constant width pulses in response to transitions of said difference frequency signal;

an averaging circuit coupled to receive said constant width pulse train for producing recovered chrominance information signals; and

a chrominance signal utilization circuit coupled to receive said recovered chrominance information signals.

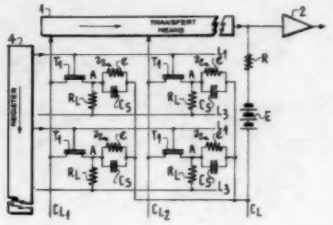
4,395,736

SOLID STATE IMAGE PICKUP

Jean Fraleux, Paris, France, assignor to Thomson - CSF, Paris, France

Filed Jul. 17, 1981, Ser. No. 284,500
Claims priority, application France, Jul. 25, 1980, 80 16493
Int. Cl.³ H04N *3/14*
U.S. Cl. 358—213 **8 Claims**

1. A matrix for detecting electromagnetic radiation comprising a network of line and column electrodes, and interconnected therewith at intersections thereof cells, each cell comprising a MOS transistor having a gate and two other terminals, a two-terminal photo-sensitive photoconductance, and means for amplifying the electric signals supplied by each photo-sensitive element; means adapted for transferring to a video amplifier the electric signals supplied by each line of elements addressed; each MOS transistor adapted for receiving periodically at its gate a turn on pulse, applied simultaneously to all the MOS transistors in the same line; one of the other terminals at each MOS transistor being connected to the transfer means, and the other to one terminal of the photoconductance in the cell; means for applying a potential to all the lines; and said other terminal of said photoconductance being connected to the line electrode adjacent to the one controlling the gate of the MOS transistor in its cell.

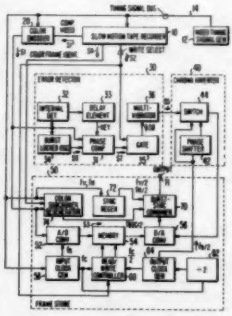


4,395,737

VIDEO DISC SLOW DOWN PROCESSOR WITH REVERSE COLOR DETECTOR/CORRECTOR

James H. Wharton, and Jack E. James, both of Indianapolis, Ind., assignors to RCA Corporation, New York, N.Y.

Filed Dec. 11, 1980, Ser. No. 215,187
Int. Cl.³ H04N *9/491, 5/78*
U.S. Cl. 358—312 **4 Claims**



1. A slow down processor, comprising:

tape recorder means operable in a slow motion playback mode for producing a redundant field composite video signal comprising sequential sets of fields, each field being produced at a standard field rate, each set of fields comprising a predetermined number of similar fields, each field normally having a predetermined chrominance-burst phase relationship but being subject to anomalous reversals of said chrominance-burst phase relationship;

frame storage means, responsive to said redundant field video signal and to a field storage selection signal produced by said tape recorder means, for storing a selected field of each set of fields and for reproducing the stored selected fields at a field rate less than said standard field rate to provide a non-redundant field video output signal of reduced bandwidth, said frame storage means being of a type in which the color burst component of composite video signal supplied thereto is not stored but is regenerated by color subcarrier regenerator means and added by adder means to the reproduced video output signal;

error detector means responsive to first and second sequential components of said redundant field composite video

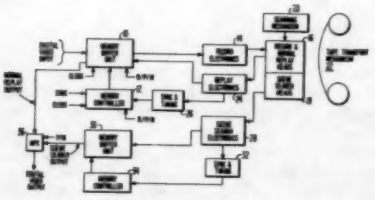
signal for detecting said anomalous reversals of said chrominance-burst phase relationship and producing a control signal, said error detector means including means responsive to said first component for producing a reference signal having an overlapping time relationship with said second component, phase comparison means responsive to said reference signal and to said second component for producing a phase reversal indicating signal and output means responsive to said phase reversal indicating signal for producing said control signal for a predetermined period of time substantially equal to N times the length of one field of said redundant field composite video signal, N being equal to said predetermined number, vertical interval detector means having an input coupled to receive said redundant field composite video signal and an output for providing a vertical interval identification signal and control circuit means responsive to said vertical interval signal for enabling said phase comparison means solely during a selected line of the vertical interval of said redundant field composite video signal; and

circuit means responsive to said control signal for effectively reversing the phase relationship of the chrominance and regenerated color burst components of said non-redundant field video output signal of said frame storage means when said control signal is present.

4,395,738
HELICAL SCAN TAPE RECORDING AND/OR REPLAY APPARATUS

Lee V. Hedlund, Maple Shade, and Donald G. Herzog, Collingswood, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Nov. 26, 1980, Ser. No. 210,788
Int. Cl.³ A04N 5/76
U.S. Cl. 358—335 **1 Claim**



1. In a record and replay system of the type wherein digital video information is recorded with each field or frame disposed on a set of multiple tracks and with only a single track being intended for replay during scene search modes, the improvement comprising:

a first memory buffer unit which directs the most significant bits and the least significant bits of pixels to separate tracks through record electronics during the record mode of operation and directs those pixel bits from the tracks of operation, said first memory buffer unit being controlled by a first memory controller and having clock and mode select signals applied thereto, said memory controller having said mode select signal applied thereto as well as clock and sync signals during the record mode of operation or sync and timing signals from said replay electronics during the normal replay mode of operation;

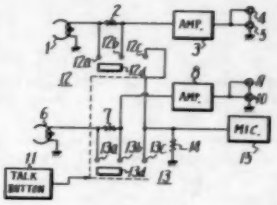
a second memory buffer unit which directs only the most significant bits of pixels from the tracks through scene search electronics during scene search replay modes of operation, said second memory buffer unit being controlled by a second memory controller and having sync and timing signals applied thereto from said scene search electronics; and

a multiplexer which directs pixel bits from either said first or second buffer memory units during normal replay or scene search replay respectively.

4,395,739
RECORDING/REPRODUCING APPARATUS WITH SELECTIVE ATTENUATION OF REPRODUCED SIGNALS TO FACILITATE COMPREHENSION OF EXTERNAL SPEECH SIGNALS

Tetsuji Nakazawa, and Toshio Asai, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 154,523, May 29, 1980. This application Feb. 16, 1982, Ser. No. 348,698
Claims priority, application Japan, Jun. 21, 1979, 54-85225
Int. Cl.³ G11B 15/12, 27/36
U.S. Cl. 360—61 **22 Claims**



1. Apparatus for reproducing signals from a record medium, comprising transducer means for reproducing said signals; amplifier means for amplifying said reproduced signals; headphone jack means coupled to said amplifier means for receiving said amplified reproduced signals and, when head-phone means are connected thereto, for supplying said amplified reproduced signals to said head-phone means to enable a listener to listen to said reproduced signals; microphone means for producing audio electrical signals; attenuator means for selectively attenuating the signals reproduced by said transducer means; and switch means selectively operative to facilitate conversation between said listener and another, said switch means having a first condition, whereby said reproduced signals are supplied from said transducer means to said amplifier means without passing through said attenuator means, and a second condition, whereby said reproduced signals are supplied to said amplifier means through said attenuator means and, additionally, said audio electrical signals are supplied from said microphone means to said amplifier means.

4,395,740
APPARATUS AND METHOD FOR LOCATING AND PRESENTING PRE-RECORDED INFORMATION

Aubrey Yuen, 5682 Oak Dr., La Palma, Calif. 90623, and William P. Battista, 3 Rollingwood Dr., Rolling Hills Estate, both of Calif. 90274

Filed Jul. 7, 1980, Ser. No. 166,449
Int. Cl.³ G11B 15/18, 17/00
U.S. Cl. 360—72.2 **57 Claims**

1. An informational display system for use in a commercial establishment for providing promotional information regarding consumer products or consumer services to enable a potential purchaser to compare products or services and to determine which of the available products or services to purchase, said system comprising:

(a) an outer housing,

(b) a plurality of manually operable switches on said housing so that one or more of said switches can be operated to introduce an input code relating to individual ones of said products or services,

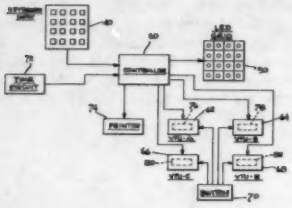
(c) a video display screen on said housing,

(d) speaker means on said housing,

(e) a controller operatively connected to said plurality of

switches and said display screen and speaker means for controlling operation of said display screen and speaker means in response to an introduced code, and

(f) a video unit operatively connected to said controller for receiving a video record member containing informational messages about said consumer products or consumer services so that the controller can select the proper informational messages on the video record member corresponding to the introduced code and cause the message to be displayed on the video screen and presented simultaneously on the speaker means to thereby enable a potential purchaser to compare products or services and determine which of a potential product or service to purchase.

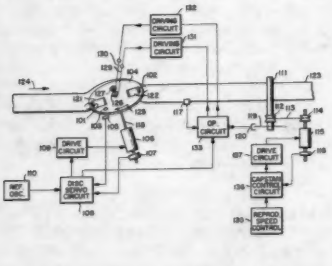


4,395,741

POSITIONABLE ELEMENT DRIVING CIRCUIT

Masaaki Kobayashi, Kawanishi; Kouichi Igata, Hirakata, and Akihiro Takeuchi, Ikoma, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jan. 16, 1981, Ser. No. 226,172
Claims priority, application Japan, Jan. 19, 1980, 55-4815
Int. Cl.³ G11B 21/10
U.S. Cl. 360—77 **3 Claims**



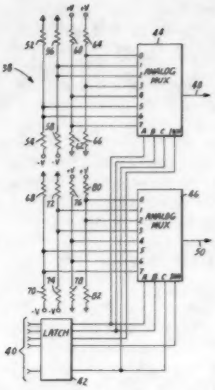
1. A positionable element driving circuit for supplying an AC driving voltage to a positionable element so as to alternatingly displace said positionable element, said driving circuit comprising: a displacing pattern signal source for supplying an AC displacing pattern signal; an amplifying means coupled to said displacing pattern signal source and supplied with said displacing pattern signal and having a gain for amplifying said displacing pattern signal by said gain; and a gain control means coupled to said amplifying means for controlling said gain of said amplifying means so as to make said gain correspond to a value which is inversely proportional to a gradient of a curve corresponding to said supplied voltage vs. a displaced position with respect to said positionable element, wherein said curve is defined by the relationship between said displaced position of said positionable element and the peak-to-peak voltage of said displacing pattern signal supplied directly to said positionable element.

4,395,742

HOME APPARATUS

Arthur Ostroff, Woodland Hills, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Oct. 15, 1980, Ser. No. 197,136
Int. Cl.³ G11B 21/08
U.S. Cl. 360—78 **9 Claims**



1. A signal reproducing apparatus, comprising:

a transducer for scanning a selected one of a plurality of parallel tracks on a record medium on which signals may be recorded,

a stepper motor for controlling the position of said transducer with respect to said plurality of parallel tracks, said stepper motor having a plurality of steps and having a plurality of windings, each step of said stepper motor being defined by a particular current present in each of said plurality of windings, the number of said plurality of parallel tracks exceeding the number of said particular steps of said stepper motor,

control means for controlling the movements of said transducer relative to said plurality of parallel tracks by moving said transducer a selected number of said tracks by providing a sequence of currents to said plurality of windings to effect a movement in said stepper motor,

a physical stop positioned near one of said plurality of parallel tracks designated a home track, said physical stop for restricting the movement of said transducer from moving beyond said home track; and

current selection means coupled between said control means and said plurality of windings for selecting between a set of high amplitude currents during normal operation and a set of low amplitude currents during initialization;

whereby the position of said transducer may be initialized at said home track by stepping said stepper motor at least the number of said plurality of parallel tracks with said set of low amplitude currents and by ending the stepping of said stepper motor with the particular currents present in said windings associated with the particular step of said stepper motor associated with said home track.

4,395,743

PINCH ROLLER DRIVE MECHANISM AND CONTROL CIRCUIT IN OPEN REEL TYPE TAPE RECORDER

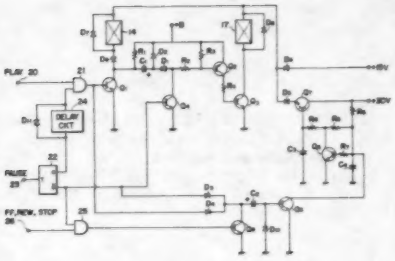
Yoshimitsu Sunaga; Toshio Kamiura, and Satoru Honda, all of Saitama, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jul. 16, 1980, Ser. No. 169,240

Claims priority, application Japan, Jul. 16, 1979, 54-90044; Jul. 16, 1979, 54-96765[U]

Int. Cl.³ G11B 15/00

U.S. Cl. 360—90 5 Claims



1. A circuit for operating a pinch roller drive mechanism having a play plunger actuating coil and a pause plunger actuating coil comprising:

a first AND gate, a play signal being coupled to a first input of said first AND gate;

a toggle flip-flop, a pause signal being coupled to a toggle input of said toggle flip-flop;

a delay circuit and a first diode coupled in series with one another between one output of said toggle flip-flop and a second input of said first AND gate;

a first transistor switch coupled to actuate said play plunger actuating coil, said first transistor switch operating in response to an output of said first AND gate;

means for producing a current flow for a predetermined period of time following actuation of said first transistor switch;

a second transistor switch coupled to actuate said pause plunger actuating coil in response to the flow of current produced by said current producing means;

a third transistor switch operating in response to a second output of said toggle flip-flop, said third transistor switch being coupled to actuate said second transistor switch independently of said current generating means;

a second AND gate, said second output of said toggle flip-flop being coupled to a first input of said second AND gate and at least one of a fast-forward, rewind, and stop signals being coupled to a second input of said second AND gate;

a fourth transistor switch;

means for actuating said fourth transistor switch for a predetermined period of time following the presence of the high level output signal on the output of said second AND gate, a high level signal at said second output of said toggle flip-flop and a high level output signal at said output of said first AND gate; and

a switching circuit operating in response to an output of said fourth transistor switch for applying a first relatively high potential to said play plunger actuating coil and said pause plunger actuating coil when said fourth transistor switch is actuated and a relatively low potential to said play plunger actuating coil and said pause plunger actuating coil when said fourth transistor switch is inactive.

4,395,744

DISC-SHAPED RECORDING MEDIUM REPRODUCING APPARATUS

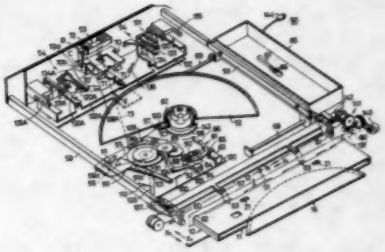
Takashi Saito, Ayase; Toshio Hirano, Atsugi, and Takashi Kumaki, Sagamihara, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Jul. 30, 1981, Ser. No. 288,292

Claims priority, application Japan, Jul. 31, 1980, 55-108488[U]; Jul. 31, 1980, 55-108489

Int. Cl.³ G11B 23/04, 17/04, 25/04

U.S. Cl. 360—97 8 Claims



1. A reproducing apparatus for reproducing a disc-shaped recording medium which is accommodated within a case, said case comprising a jacket which has a space for accommodating said disc-shaped recording medium and an opening for allowing said disc-shaped recording medium to go in and out of said jacket, and a lid member inserted through said opening of said jacket for closing said opening of said jacket, said reproducing apparatus comprising:

an inserting opening part through which said case is inserted into said reproducing apparatus;

a turntable for rotating said disc-shaped recording medium;

lid member locking means and disc-shaped recording medium clamping means respectively provided at the innermost part of said reproducing apparatus opposite to said inserting opening with respect to said turntable;

jacket opening enlarging means provided in the vicinity of said inserting opening, moving over said turntable between the position in the vicinity of said inserting opening and said innermost part of said reproducing apparatus, accompanied by operation of inserting said case into and pulling the same from said reproducing apparatus;

elevating means for moving a member for supporting said disc-shaped recording medium upwards and downwards independent of said turntable, said elevating means assuming a state of elevating said supporting member upon inserting said case into said reproducing apparatus;

an elevating lever member, provided in conjunction with said elevating means to assume a position entering into a passage of an engagement guide port which constitutes a part of said jacket opening enlarging means upon inserting said case into said reproducing apparatus, and engaged and pushed by said engagement guide part moving accompanied by the insertion of said case to undergo displacement in one direction, causing said elevating means to operate so as to move said supporting member downwards to retreat from an insertion passage of said case; and

locking means, responsive to an insertion operation of said case, for locking said elevating lever member at the position displaced in the one direction so as not allow return displacement thereof, and, responsive to a pulling-out operation of said case, for making said elevating lever member free from locked state to allow said elevating lever to return to the original position thereof.

4,395,745

HEAD-DRUM MOUNTING FOR A HELICAL SCAN TAPE RECORDER

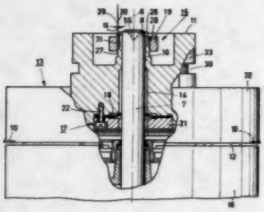
Petrus J. J. Aarts, Eindhoven, Netherlands; Harald Fleck; Karl Kocsisek, both of Vienna, Austria, and Ernst M. Schmidt, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 25, 1980, Ser. No. 180,779

Claims priority, application Netherlands, Aug. 29, 1979, 7906478

Int. Cl.³ G11B 5/10

U.S. Cl. 360—129 17 Claims



1. An apparatus for magnetically recording and reading wide-band signals on a magnetic tape in signal tracks which extend obliquely on the tape adjacent each other, comprising:

(a) an at least partly cylindrical drive spindle having a free end, rotatable about an axis of rotation,

(b) a head-drum system detachably secured to a cylindrical portion of the drive spindle near its free end, having a first side adjacent said free end, a second side remote from said free end, a central bore for mounting the head-drum system on the drive spindle, and comprising at least one magnetic head rotatable in a circular path about said axis of rotation, and

(c) a first centering device on the first side of the head-drum system, comprising a first electrically deformable wall portion on the first side of the head-drum system, which wall portion engages the drive spindle for centering the head-drum system, characterized in that

the head-drum system further comprises a second centering device spaced axially from the first centering device, said second centering device comprising a second elastically deformable wall portion which engages the drive spindle and is disposed on the second side of the head-drum system.

4,395,746

METHOD AND DEVICE FOR MAGNETICALLY TRANSPORTING

Hiroto Tanaka, Kamifukuoka; Yasumasa Kohno, Fujisawa; Hideyuki Tanaka, and Kotaro Sasaki, both of Sendai, all of Japan, assignors to Ishikawajima-Harima Jukogyo Kabushiki Kaisha and Tohoku Kinzoku Kogyo Kabushiki Kaisha, both of Tokyo, Japan

Filed Apr. 24, 1980, Ser. No. 143,422

Claims priority, application Japan, May 2, 1979, 54-54600; May 4, 1979, 54-55040; May 4, 1979, 54-55041

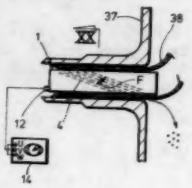
Int. Cl.³ H01F 13/00

U.S. Cl. 361—143 4 Claims

1. Apparatus for transporting fine particles of which at least a part of magnetizable such as the CRUD particles accumulated in a nuclear reactor, comprising:

(a) first magnetic field source means for applying a stationary magnetic field to magnetize the particles prior to transport; and

(b) second magnetic field source means comprising a multiphase generator with a plurality of ring-shapedly formed coils disposed on a cylindrical magnetic core and having a three-quarter full-pitch winding and operative on the particles magnetized by the first magnetic field source



means for applying a revolving magnetic field to transport the magnetized particles.

4,395,747

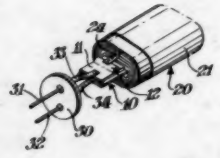
LOW INDUCTANCE ELECTROLYTIC CAPACITOR

Jack D. White, Clinton, Tenn., assignor to Sprague Electric Company, North Adams, Mass.

Filed Apr. 29, 1981, Ser. No. 258,709

Int. Cl.³ H01G 9/00, 1/06, 4/06

U.S. Cl. 361—433 4 Claims



1. A low inductance electrolytic capacitor comprising a pair of rectangular metal strips each having a raised projection spaced from one end thereof, a plastic insulating strip having a first tab extending laterally from one end thereof and a second lateral tab extending from the other end of said strip and in opposition to said first tab, said insulating strip being sandwiched between said metal strips with one tab being folded over one end of one of said metal strip and said second tab being folded over an end of said second metal strip, said metal strips being positioned so that one of said projections lies at one end of the resulting assembly and the other of said projections lies at the other end of said assembly, said metal strips and said barrier strip being laminated together forming a stripline, an anode foil and a cathode foil wound with interleaved spacer material in extended foil fashion directly around said stripline, said extended anode foil being crushed and welded to one of said projections, said extended cathode foil being welded to the other of said projections, a cover bearing two terminals one of which is electrically connected to one of said metal strips forming said stripline and the other of which is electrically connected to the other of said metal strips, and a housing in which said capacitor section is located and to which said cover is sealed.

4,395,748

DETACHABLE FLASH ACCESSORY FOR PHOTOGRAPHIC APPARATUS

John C. Killian, Jr., Sudbury, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

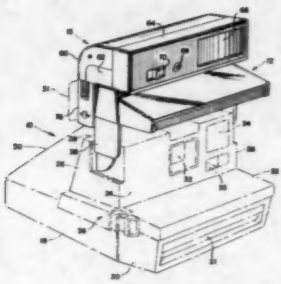
Filed Dec. 29, 1980, Ser. No. 220,897

Int. Cl.³ G03B 15/02

U.S. Cl. 362—8 3 Claims

1. A flash illuminating accessory releasably attachable to a photographic camera apparatus of the type having an opening therein for providing access to a camera latching formation

and having camming surfaces adjacent the latching formation, said accessory comprising a housing having a plurality of openings and enclosing an energizable source of illumination; and means for mounting said accessory on said camera, said mounting means including a unitary latching body mounted for movement in and relative to said housing, said unitary body having a finger-engageable portion being accessible through a first of said housing openings, said unitary body having a biasing portion being formed generally opposite said finger-engageable portion along a given axis and cooperable with said housing to bias said unitary body in one direction to an initial condition, said unitary body having a latching finger extending



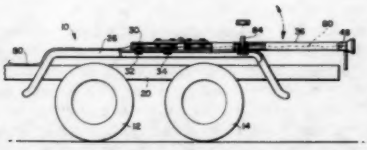
from said body outwardly from a second housing opening for selective latching cooperation with the camera latching formation, said biasing portion allowing said body to move, in response to forces urging said body in a direction opposite the one direction along the given axis as said finger engages the camming surface, from the initial position to a prelatching condition, and then urging said body and finger in the one direction so that said finger can latchingly cooperate with the camera latching formation, said finger-engageable portion being selectively movable in the opposite direction for allowing overcoming of the biasing force, so as to thereby allow release of said finger from the camera latching formation.

4,395,749

BOAT TRAILER LAMP AND LICENSE PLATE SUPPORT

George A. Poveromo, 14135 N. Miami Ave., Miami, Fla. 33168

Filed May 6, 1981, Ser. No. 261,078
Int. Cl.³ B60Q *1/26, 1/56*
U.S. Cl. 362—83 6 Claims



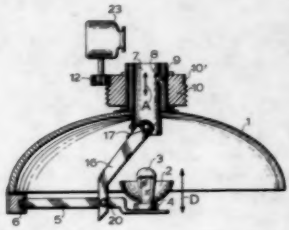
1. A boat trailer lamp and license plate support comprising:
a hollow base secured to the fender of said trailer;
a hollow bar spaced from said base a distance, said hollow bar attached to said base by a hinge member and in axial alignment therewith;
a lamp and license plate attached to said bar;
electric wiring extending from a power supply through said hollow base and said hollow bar to said lamp for lighting same; and
said hollow bar pivotable on said hollow base plate by said hinge so that the lamp and license plate may be positioned behind the trailer during over-the-road travel and repositioned forward of the trailer during launching of a boat therefrom whereby the lamp and electric wiring will not contact the water during launching.

4,395,750

OPERATING ROOM LIGHT

Hans Scheidemann, Maintal; Alois Rieth, Offenbach; Bruno Sebralla, Bruchköbel, and Walter Wohlfart, Klein Ostheim, all of Fed. Rep. of Germany, assignors to W. C. Heraeus GmbH, Hanau, Fed. Rep. of Germany

Filed Feb. 3, 1981, Ser. No. 231,159
Int. Cl.³ F21V *1/00*
U.S. Cl. 362—239 10 Claims



1. Operating room light haaving a dome-shaped reflector (1) formed with a downwardly directed light opening;
a halogen incandescent lamp bulb (3) positioned "base down" and directing light upwardly towards the dome-shaped reflector (1);
a counter reflector (2) surrounding the bulb and reflecting light upwardly towards the dome-shaped reflector (1);
and a holding structure for said bulb and counter reflector, comprising
an arm (5) extending at least partly across the dome-shaped reflector,
wherein
said arm includes a fixed pivot point at one end thereof, located adjacent the circumference of the dome-shaped reflector, the halogen lamp bulb (3) being positioned adjacent the other end of said arm,
and means positioning the pivot arm (5) and hence the bulb (3) with respect to the reflector comprising
an adjustable element (7) capable of being adjustably positioned with respect to the apex of the dome-shaped reflector (1);
and a releasable coupling element (16, 20; 18, 19; 21, 22) connecting the pivot arm (5, 25) and the adjustable element (7, 28) to provide for pivotable adjustment of the pivot arm and hence the lamp bulb (3) with respect to the apex of the dome-shaped reflector upon positioning of the adjustable element and permit release of coupling engagement between the pivot arm and the adjustable element to permit free pivoting of the pivot arm about the pivot point adjacent the circumference of the reflector and hence repositioning of the bulb and the counter reflector to provide for accessibility to the bulb, the counter reflector and the dome-shaped reflector for servicing.

4,395,751

FLUX-BALANCED VARIABLE FREQUENCY INVERTER

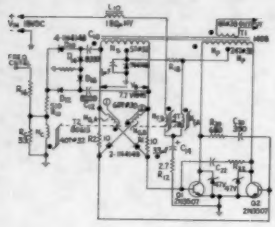
Lawrence G. Meares, Rancho Palos Verdes, Calif., assignor to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Sep. 21, 1981, Ser. No. 303,780
Int. Cl.³ H02M *7/537;* H02P *13/12*
U.S. Cl. 363—134 6 Claims

1. In a two-core inverter comprising two transistor switches, a power core and a timing core, the improvement comprising a flux-balanced, variable frequency inverter wherein the timing core of the two-core inverter is replaced by a magnetic

amplifier assembly comprising a control core assembly having two cores which are connected with a control winding; said inverter further comprising:

a control current feedback means connected between a frequency-proportional control current source and the control winding of the magnetic amplifier; and,



a flux excursion balancing means comprising two separate feedback magnetic amplifier windings about the control core assembly of the magnetic amplifier connected in opposing directions between an input DC voltage source and a center tap on the input side of an output transformer on the power core of the inverter.

4,395,752

DIGITAL CONTROL PROCESS WITH INVERSE FUNCTION TABLE MEMORY

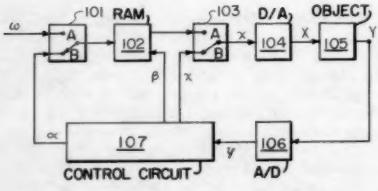
Makoto Hirosawa, Kyoto, Japan, assignor to Dainippon Screen Mfg. Co., Ltd., Kyoto, Japan

Filed Dec. 22, 1980, Ser. No. 218,687

Claims priority, application Japan, Jan. 8, 1980, 55-1017; Sep. 24, 1980, 55-133442

Int. Cl.³ G06F *15/46*

U.S. Cl. 364—130 **6 Claims**



1. A digital control process having a measuring mode and a control mode comprising, during the measuring mode, inputting a digital measuring signal to an object to be controlled, obtaining from said object a digital measured output signal, and writing said digital measuring signal as data in a random access memory at a memory address corresponding to said digital measured output signal, and, during the control mode, inputting to the random access memory as an address a digital control signal related to a desired output signal of the object to be controlled, reading the data associated with said address, and supplying said data to the object to be controlled whereby said desired output signal is obtained and the object is controlled.

4,395,753

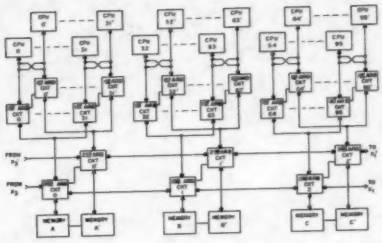
ALLOCATION CONTROLLER PROVIDING FOR ACCESS OF MULTIPLE COMMON RESOURCES BY A PLURALITY OF CENTRAL PROCESSING UNITS

Joseph A. Comfort; Thomas J. Perry, and Michel Loos, all of Phoenix, Ariz., assignors to GTE Automatic Electric Labs Inc., Northlake, Ill.

Filed Jun. 26, 1980, Ser. No. 163,048

Int. Cl.³ G06F *13/00, 13/06*

U.S. Cl. 364—200 **14 Claims**



1. An allocation controller providing for sharing of multiple common resources by pluralities of CPUs, said allocation controller comprising:

a plurality of CPUs including first, second and third groups, each group including first and second portions;

at least three common resources, each adapted to be connected to any CPU of said plurality;

first arbitration means including first, second and third groups, each group of first arbitration means connected to a corresponding group of CPUs;

said first arbitration means operated in response to a resource request signal from a CPU to provide for selection of one CPU per group;

a plurality of CPU buses each bus connected between a particular CPU and said first arbitration means, each CPU bus including a control portion and an address/data portion;

at least three group buses, each bus corresponding to one said CPU group and connected between a particular CPU through said corresponding CPU bus via said first arbitration means and connected to a particular resource via one said group bus and said second arbitration means, each bus further connected to each other of said group buses;

second arbitration means connected between each common resource and each group of first arbitration means, and said second arbitration means operated in response to said operation of said first arbitration means to select one of said requesting CPUs of one of said different CPU groups for connection to one of said common resources via one of said three group buses and said corresponding CPU bus;

said group buses connected to said requesting CPU via said corresponding CPU bus through said first arbitration means and said second arbitration means and connected to said common resources to establish bus connection between said selected CPU and said selected resource for the transmission of data to and from said resource; and

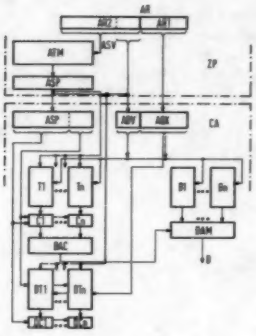
said second arbitration means operated on a rotational basis to allocate access of said selected common resource to one of said requesting CPUs of said different CPU groups.

4,395,754

DATA PROCESSING SYSTEM HAVING VIRTUAL MEMORY ADDRESSING

Wolfgang Feissel, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 22, 1980, Ser. No. 180,337
Claims priority, application Fed. Rep. of Germany, Sep. 28, 1979, 2939411
Int. Cl.³ G06F 7/04
U.S. Cl. 364—200 2 Claims



1. In a data processing system of the type having virtual addressing and in which a central processor includes a first address register comprising a lower-order portion for receiving real class addresses, and a higher-order portion for receiving virtual page addresses, and an address translation memory means for converting virtual page addresses into real page addresses, and in which a buffer memory is connected between the central processor and a working memory of the system and includes a second address register for receiving real page addresses, a third address register for receiving real class addresses, a data buffer comprising a plurality of equal size data banks connected to and accessed by the third address register, a plurality of tag/flag memories respectively assigned to the data banks and connected to the third address register and connected to the address translation means for storing real page addresses, and comparison means connected to compare the translated page addresses with the page addresses in the tag/flag memories and emit a data bank selection signal to a data bank multiplexer in response to equality of the addresses, the improvement therein comprising:

predetermined higher-order locations in the higher-order portion of the first address register for receiving and storing additional virtual address bits of virtual addresses, which additional virtual address bits are directly connected with the real page class addresses and are equal in number to the bits required for addressing each data bank and its associated tag/flag memory and which are provided in addition to a real class address;

a section of said third address register connected to said first address register to receive the bits stored in said predetermined higher-order locations and transfer said additional virtual address bits to said data banks; and

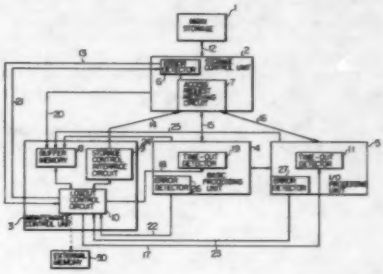
duplicate tag/flag memories respectively assigned to the tag/flag memories and connected to said third address register and to said address translation memory means for addressing with both the real class addresses and the additional real page addresses obtained by translation of the additional virtual address bits.

4,395,755

INFORMATION PROCESSING SYSTEM AND LOGOUT PROCESS THEREFOR

Katsuro Wakai, Hadano, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 6, 1981, Ser. No. 232,001
Claims priority, application Japan, Feb. 6, 1980, 55-12519
Int. Cl.³ G06F 11/00
U.S. Cl. 364—200 9 Claims



1. An information processing system comprising a main storage, at least one processing unit, a storage control unit and a maintenance control unit for said storage control unit and said processing unit, said storage control unit being interposed between said main storage and said maintenance control unit as well as between said main storage and said processing unit for controlling said main storage upon receipt of storage access requests from said maintenance control unit and said processing unit, and in which:

said processing unit includes means for detecting a timeout and for inhibiting said storage control unit in response thereto;

said storage control unit includes means responsive to detection of an error in said storage control unit for inhibiting said storage control unit from receiving said storage access requests and for reporting said detected error to said maintenance control unit; and

said maintenance control unit includes logout control means responsive to reception of said reported error in said storage control unit for inhibiting said time-out detecting means in said processing unit, and buffer memory means responsive to said inhibiting of said time-out detecting means for fetching from said storage control unit internal information representative of the state of said storage control unit at the time when said error took place and for storing said fetched internal information;

said error detection means in said storage control unit including means responsive to said logout control means at the completion of said internal information storing in said maintenance control unit for removing said inhibiting of said storage access request reception.

4,395,756

PROCESSOR IMPLEMENTED COMMUNICATIONS INTERFACE HAVING EXTERNAL CLOCK ACTUATED DISABLING CONTROL

Edward P. Daniels, Bridgeport, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Feb. 17, 1981, Ser. No. 235,242
Int. Cl.³ G06F 3/04, 15/16
U.S. Cl. 364—200 10 Claims

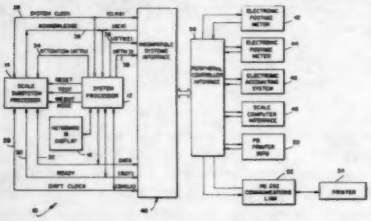
1. A communications interface adapted to interconnect a system processor and at least one peripheral device, the system processor and the interface being operatively connected to a serial communications bus, the system processor including system clock means for transmitting a system clock signal on

the communications bus, the system processor including means for receiving a series of data within time frames defined by and synchronous with the system clock signal, the interface comprising:

(a) processing means, the processing means having an average instruction execution time sufficiently long with respect to the system clock cycle time wherein the processor's average instruction execution time will not permit data to be transmitted from the processing means to the system processor within the time frame and synchronously with the system clock;

(b) buffer means operatively connected between the processing means and the communications bus for temporarily storing data being transmitted from the processing means to the system processor, the buffer latching data transmitted by the processing means onto the communications bus data line;

(c) means, operatively connected to the processing means, for receiving the system clock signal;



(d) means for transmitting a command signal from the processing means to the clock signal receiving means, the command signal being transmitted after transmission of data to the buffer means by the processing means, said transmission of data occurring during execution of a data transmission routine by the processing means;

(e) the clock signal receiving means in response to the concurrence of a predesignated portion of the system clock cycle and assertion of the command signal generating a disabling signal, the processing means receiving the disabling signal and in response thereto pausing in execution of the data transmission routine, the clock signal receiving means discontinuing the disabling signal in response to a subsequent occurrence of the predesignated portion of the system clock cycle, and the processing means continuing the execution of the data transmission routine in response to the discontinuence of the disabling signal, whereby the interface operatively controls a data transfer to the sytem processor in synchronism with the system clock.

4,395,757

PROCESS SYNCHRONIZATION UTILIZING SEMAPHORES

Jacques Bienvenu, Paris; Claude Carre, La Varenne-St-Hilaire; Duc Luu, and Henri Verdier, both of Paris, all of France, assignors to Compagnie Honeywell Bull, Paris, France

Continuation of Ser. No. 58,147, Jul. 17, 1979, abandoned, which is a continuation of Ser. No. 529,256, Dec. 2, 1974, abandoned. This application Apr. 14, 1981, Ser. No. 254,184

Claims priority, application France, Nov. 30, 1973, 73 42691

Int. Cl.³ G06F 9/00

U.S. Cl. 364—200 **8 Claims**

1. Apparatus for enabling synchronization among events such as a completion of an asynchronous operation, an arrival of a message, an availability of a resource, an arrival of a process at a particular stage of execution, any kind of which will affect to be affected by a process presently or ultimately operating in a data processing system, said events occurring at different times in said data processing system, comprising in combination:

a memory member adapted to have stored therein first, second and third queues of representations, respectively of the occurrences of first, second and third kind events, said first, second and third kind events being, respectively, message free events, message bearing events and resource requesting processes;

said memory member having stored therein first and second data elements, each of said data elements comprising:

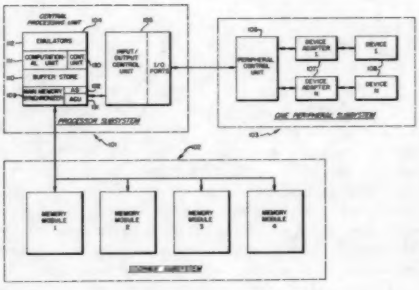
a first field representing a maximum number of events which may be associated with said data element;

a second field representing a number of events currently associated with said data element; and

a third field representing a location of the first kind event representation in one of said three queues associates with said data element;

first testing means responsive to the occurrence of one of said first kind events and to the first and second storage fields of said first data element for generating a first signal when the algebraic value of the number represented by said second field is less than a predetermined value and said number is less in magnitude than the number represented by said first field;

first control means responsive to the occurrence of said first



signal for inserting a representation of said one first kind event into said first queue, for decrementing the number represented by the second field of said first data element, and for modifying the third field of said first data element to point to the location in said first queue of said representation inserted thereinto;

second testing means responsive to the occurrence of one of said second kind events and to the first and second fields of said first data element for generating a second signal when the algebraic value of the number represented by said second field is not less than said predetermined value and said number is less in magnitude than the number represented by said first field;

second control means responsive to the occurrence of said second signal for inserting a representation of said one second kind event into said second queue, for incrementing the number represented by the second field of said first data element, and for modifying the third field of said first data element to point to the location in said second queue of said repesentation inserted thereinto; and

means for applying message free and message bearing events having occurrence representations stored respectively in said first and second queues to requesting processes.

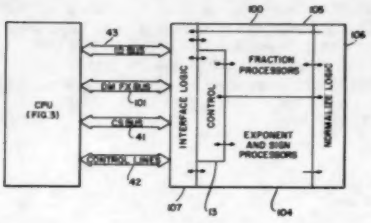
4,395,758
ACCELERATOR PROCESSOR FOR A DATA PROCESSING SYSTEM

Allan Helenius, Westford; Stanley A. Lackey, Jr., Chelmsford, and Thomas A. Northrup, Westford, all of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 101,700, Dec. 10, 1979, abandoned, which is a continuation of Ser. No. 954,609, Oct. 25, 1978, abandoned. This application Oct. 13, 1981, Ser. No. 310,826

Int. Cl.³ G06F *15/16*

U.S. Cl. 364—200 **7 Claims**



1. In a digital data processing system including central processing means for executing instructions and for connection to memory means for storing instructions that include operation codes representing operations to be performed and operand specifiers that indicate the operands on which the operations are to be performed and wherein the central processing means includes addressable register means for storing information including operands, retrieval means for retrieving operands in response to the operand specifiers, code means for generating operation code signals that identify an operation to be performed with respect to at least one operand in accordance with an operation code of an instruction, and processor means connected to the retrieval means and the code means for either processing the retrieved operands in response to certain operation code signals or entering an alternate state of operation in response to predetermined ones of said operation code signals, said processor means including destination computation means for computing a destination address in said memory means at which a result is to be stored and for generating a destination ready signal for indicating that said central processing means is ready to receive a result of at least one operand processed in response to said predetermined operation code signals, a special instruction processing means for processing predetermined ones of the instructions corresponding to said predetermined operation codes, said special instruction processing means including:

A. operand means for retrieving each operand concurrently with the retrieval thereof by the retrieval means in the central processing means,

B. special processing means connected to said operand means and operable to process the operands;

C. control means connected to the central processing means and said special processing means for receiving each of the operation code signals from the code means concurrently with the processor means in the central processing means, for recognizing said predetermined code signals, for operating said special processing means to process the operands in said operand means in response to said predetermined operation code signals, and for automatically disabling the processing of the retrieved operands by the processor means in accordance with said predetermined operation codes when said control means receives one of the predetermined operation code signals but permitting said destination computation means to compute said destination address, and

D. transfer means connected to said special processor means for transferring to the central processing means the result of the operation by said special processing means in response to said destination ready signal.

4,395,759
ELECTRONIC SAFETY SKI BINDING WITH REDUNDANT SENSORS

Nicholas F. D'Antonio, Luverpool, N.Y., and Walter Knabel, Farchant, Fed. Rep. of Germany, assignors to Marker-Patentverwertungsgesellschaft GmbH, Switzerland

Filed Jun. 19, 1980, Ser. No. 160,926

Claims priority, application Fed. Rep. of Germany, Jun. 22, 1979, 2925375

Int. Cl.³ A63C *9/08*

U.S. Cl. 364—410 **8 Claims**

1. An electronic safety ski binding having a latching condition for grasping a skier's boot in the binding and a releasing condition for releasing the boot from the binding comprising:

at least two sensing means for redundantly detecting loads acting in a particular direction on the binding and generating electrical signals in response to said loads; and

electronic circuitry operatively connected to said sensing means for receiving and processing said signals and generating a triggering signal to switch the binding from its latching condition to its releasing condition in response to the detection of a load of a predetermined value by at least one of said sensing means, wherein said triggering signal is generated when at least one of said at least two sensing means is operative and a load of the predetermined value is detected.

4,395,760
ELECTRONIC BASEBALL GAME

Norbert S. Soski, 16641 Calneva Dr., Encino, Calif. 91436, and Richard S. Levine, 8400 Edinger Ave., Huntington Beach, Calif. 92647

Filed Jan. 7, 1981, Ser. No. 223,184

Int. Cl.³ G06F *15/44*; A63F *9/00*

U.S. Cl. 364—410 **5 Claims**

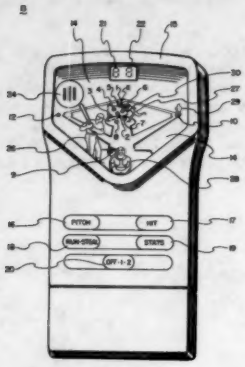
1. An electric baseball game comprising:

a display having indicia in the form of first illuminable indicators simulating base runners, second illuminable indicators simulating a ball, and indicia representing a pitcher, a batter, and bases;

input means for providing input signals to cause the pitcher to throw the ball, to cause the batter to swing at the ball, and to cause a runner to run toward a base;

control means responsive to the input means for controlling the illuminable indicators to depict the play of the game, including means for incrementally varying the brightness of one of the first illuminable indicators in a sequential manner to simulate movement and rate of movement of a base runner toward that one first illuminable indicator,

and means for incrementally varying one of the second illuminable indicators in a sequential manner to simulate



movement and rate of movement of the ball away from that one second illuminable indicator.

4,395,761

ANTISKID BRAKE CONTROLLING METHOD AND APPARATUS FOR VEHICLES

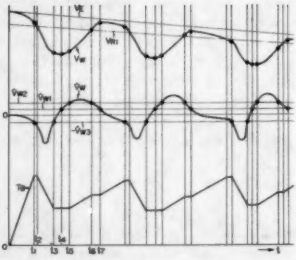
Makoto Sato, Kamifukuoka; Taiji Ohmori, and Yoshikazu Tsuchiya, both of Kawagoe, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 6, 1981, Ser. No. 261,142

Claims priority, application Japan, May 15, 1980, 55-64546; Sep. 13, 1980, 55-127810

Int. Cl.³ B60T *8/02*

U.S. Cl. 364—426 **17 Claims**



1. An antiskid brake controlling method comprising: comparing, during braking of a vehicle, a wheel speed signal V_w representative of the peripheral speed of a wheel of the vehicle with a first reference wheel speed signal V_R1 less than a vehicle speed signal V_E and with a second reference wheel speed signal V_R2 which is less than said first reference wheel speed signal V_R1; comparing a wheel acceleration signal V_w representative of the peripheral acceleration of said wheel with a first reference wheel acceleration signal V_{w1} representing a predetermined positive peripheral acceleration of said wheel, a second reference wheel acceleration signal V_{w2} greater than said first reference wheel acceleration signal and a reference wheel deceleration signal $-V_{w3}$ representative of a predetermined negative peripheral acceleration of said wheel; decreasing the braking torque T_B from an instant at which said wheel acceleration signal V_w has dropped below said reference wheel deceleration signal $-V_{w3}$ when said wheel speed signal V_w is less than said first reference wheel speed signal V_R1 but greater than said second reference wheel speed signal V_R2; stopping the decrease of the braking torque T_B after said wheel acceleration signal V_w comes to increase again, at an instant at which said wheel acceleration signal V_w exceeds said reference wheel deceleration signal $-V_{w3}$; and also decreasing the braking torque T_B until the wheel acceleration signal V_w increases to exceed said first reference wheel acceleration signal V_{w1} when said wheel speed signal V_w has dropped below said second reference wheel speed signal V_R2.

4,395,762

FREQUENCY COUNTER

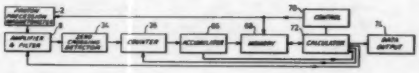
Hendrik M. Wondergem, Ste. 1903, 265 Balliol St., Toronto, Ontario, Canada M4S 1C9, and Robert J. Kaldenbach, 5 Denham Dr., Thornhill, Ontario, Canada (L4J 1N5)

Filed Feb. 17, 1981, Ser. No. 234,994

Claims priority, application Canada, Oct. 28, 1980, 363389

Int. Cl.³ G06F *15/36*; G01R *23/02*

U.S. Cl. 364—484 **13 Claims**



1. Apparatus for determining the frequency of a cyclical component of a signal, comprising a signal source, filter means for receiving said signal and isolating said component, means for receiving said isolated component and dividing it at predetermined points in its cycle whereby to divide it into elements comprising an integral number of half cycles, an elapsed time counter means receiving said elements and outputting successive counts defining increments in total elapsed time corresponding to the successive elements, memory means receiving and storing said counts, a statistical calculator operative to receive said stored counts and provide an output proportional to a statistical means increment in total elapsed time, and readout means operative to receive said output and provide a readout of the frequency or period of said cyclical component of said signal, said statistical calculator being configured to determine a statistical mean increment such as to minimize the sum of the squares of the residuals of said successive total elapsed times as counted to the end of each element with respect to the corresponding incremental total elapsed times calculated on the basis of said mean.

4,395,763

BUFFER MEMORY CONTROL SYSTEM OF THE SWAP SYSTEM

Masanori Takahashi, Tokyo, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Filed Dec. 5, 1980, Ser. No. 213,401

Claims priority, application Japan, Dec. 6, 1979, 54-158417

Int. Cl.³ G06F *13/00*

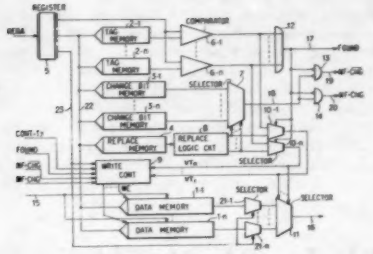
U.S. Cl. 364—900 **3 Claims**

1. A control system for writing data in a buffer memory of a swap type data block storage system which control system performs an ordinary memory access only with the buffer memory and when data having a requested address does not exist in a data block of the buffer memory, moves out from the buffer memory a selected one of replaceable data blocks thereof to a main memory and moves from said main memory into the buffer memory a data block from the main memory which includes the data at the requested address, said control system comprising:

a first detecting means for detecting whether the data block of the buffer memory including the data of the requested address exists in the buffer memory; and

a second detecting means for detecting whether the replaceable data block has been changed after being previously loaded in the buffer memory;

including means for writing data in the buffer memory in an area of a size equal to or an integral multiple of the data block of said buffer memory when it is detected by said first detecting means that the data corresponding to said requested address does not exist in the buffer memory and it is detected by said second detecting means that the



replaceable data block has not been changed, wherein data including the data to be written in is written in the replaceable data block of the buffer memory directly without performing at least the operation of moving in the requested address block from the main memory including data at the requested address so that the data in the replaceable block is overwritten with the data for the requested address.

4,395,764

MEMORY DEVICE UTILIZING SHIFT REGISTERS FOR DATA ACCESSING

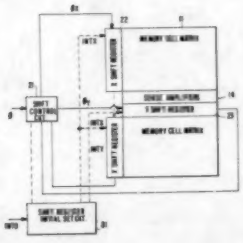
Shigeki Matsue, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Dec. 29, 1980, Ser. No. 221,106

Claims priority, application Japan, Dec. 27, 1979, 54-170712

Int. Cl.³ G11C *7/00, 19/00*

U.S. Cl. 365—78 **13 Claims**



1. A memory device comprising memory cell array including a plurality of memory cells arrayed in rows and columns, a first shift register having a full shift length and having a plurality of outputs, the number of said outputs of said first shift register being not less than the number of said rows, first means responsive to a start signal for initializing the outputs of said first shift register so as to set only one output among the outputs of said first shift register at a selection level, second means responsive to the outputs of said first shift register for selecting one of said rows, third means for generating a shift length designation signal for designating a desired shift length which is shorter than said full shift length whereby a portion of said shift register outputs corresponding to said desired shift length will address a portion of said rows of said cell array, fourth means for supplying said first shift register with a train of shift signals to thereby shift a location of the set output of said first shift register, fifth means coupled to said third means and said fourth means for detecting when the location of said set output of said first shift register reaches a position of said first shift register corresponding to said desired shift length designated by said shift length designation signal, and sixth means coupled to said first means and said fifth means for producing said start signal upon the detection by said fifth means that said set output of said first register has reached said position corresponding to said desired shift length, whereby said portion of the rows of said cell array are sequentially addressed in synchronism with said shift signals.

4,395,765

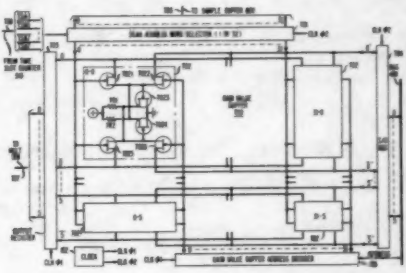
MULTIPORT MEMORY ARRAY

Bryan S. Moffitt, Eatontown, N.J., and Alexander R. Ross, Allentown, Pa., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 23, 1981, Ser. No. 256,697

Int. Cl.³ G11C *7/00*

U.S. Cl. 365—174 **7 Claims**



1. A memory array having a plurality of memory storage elements,

a first pair of access lines associated with said elements for providing precharged interrogate signals to said elements, and wherein each said element is arranged to respond to said precharged interrogate signals with the signal value stored thereat, said response occurring at a time immediately following the precharging of said first access lines, said elements further arranged to be isolated from said first access lines during said precharging interval, characterized in that there is provided a second pair of access lines associated with said elements, said second pair of access lines being independent from said first pair of access lines for providing precharged interrogate signals to said elements, said second pair of access lines being adapted to receive precharge interrogate signals at a time different from the precharging of interrogate signals on said first pair of access lines thereby allowing said associated elements to respond with the signal value stored thereat over said second pair of access lines independent from said response over said first pair of access lines.

4,395,766

LASER TYPE RECORDING DEVICE

Masahiro Ohnishi; Shigenori Oosaka, and Hiroshi Oono, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 9, 1980, Ser. No. 214,815

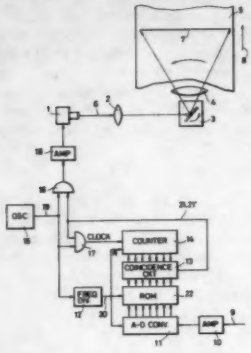
Claims priority, application Japan, Dec. 25, 1979, 54-168565

Int. Cl.³ H04N *1/22*

U.S. Cl. 369—47 **6 Claims**

1. A laser type recording device comprising: means for sampling an input signal with a sampling pulse signal; means for applying a high frequency pulse signal whose frequency is

higher by at least two orders of magnitude than the frequency of said sampling pulse to a semiconductor laser; and means for



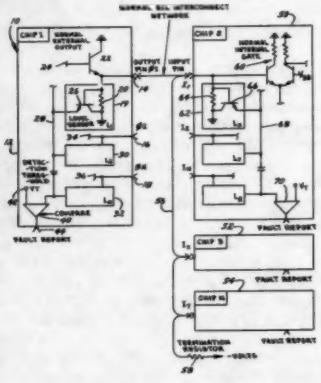
controlling a number of pulses of said high frequency pulse signal applied to said semiconductor laser according to a magnitude of said sampled input signal.

4,395,767

INTERCONNECT FAULT DETECTOR FOR LSI LOGIC CHIPS

Nicholas P. Van Brunt, and John H. A. Ketzler, both of White Bear Lake, Minn., assignors to Control Data Corporation, Minneapolis, Minn.

Filed Apr. 20, 1981, Ser. No. 255,929
Int. Cl.³ G01R *31/28*; G06F *11/00*
U.S. Cl. 371—25 **9 Claims**



1. A logic circuit interconnect fault detection system comprising:

a first logic circuit chip containing conventional logic circuits connected with input and output pins,

at least one voltage level sensing circuit on said first logic circuit chip associated with one of the connecting pins of said first logic circuit chip,

a comparator on said first logic circuit chip having a first input connected with the output of said voltage level sensing circuit, having a second input for receiving a reference voltage as the fault detection threshold input and the output of said comparator connected to an output pin of said first logic circuit chip, said comparator output being a fault indication signal,

a second logic circuit chip containing conventional logic circuits connected with input and output pins,

at least one voltage level sensing circuit on said second logic circuit chip associated with one of the connecting pins of said second logic circuit chip,

a comparator on said second logic circuit chip having a first input connected with the output of said voltage level sensing circuit, having a second input for receiving a reference voltage as the fault detection threshold input and the output of said comparator connected to an output pin of said second logic circuit chip said comparator output being a fault indication signal,

a plurality of interconnect systems between particular input and output pins of said first and second chips, at least one interconnect system including at least one pin on said first or second chip having a voltage level sensing circuit and

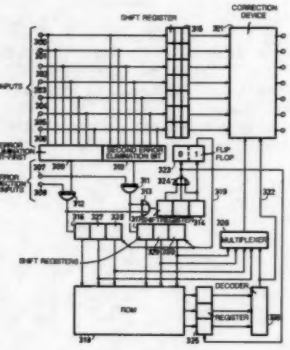
a termination impedance for each interconnect system said impedance having a termination reference voltage level.

4,395,768

ERROR CORRECTION DEVICE FOR DATA TRANSFER SYSTEM

Jean M. E. B. Goethals, Brussels, Belgium, and Thijs Krol, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 33,781, Apr. 27, 1979, abandoned. This application Apr. 24, 1981, Ser. No. 257,016
Claims priority, application Netherlands, May 2, 1978, 7804673
Int. Cl.³ G06F *11/10*
U.S. Cl. 371—45 **8 Claims**



1. A device for introducing binary data into a medium, said device comprising:

parallel data inputs for receiving streams of input data bits in successive first groups of (n−2) bits each, said successive groups being interspaced in time over a delay cell D;

(n−2) parallel data outputs, wherein n is >6, for presenting said first groups of (n−2) data bits each in order of reception to (n<2) respective parallel data channels of the medium;

said data outputs being connected to said data inputs;

means connected to said data inputs with modulo 2 adding means for receiving the data content of a first group of (n−2) data bits received and therefrom producing synchronously with each presentation of said group to said (n−2) parallel data channels, a first error correction bit to an (n−1)th parallel redundancy channel of said medium, wherein for each of said at least (n−2) data channels the contribution to the first error correction bit is expressed in a respective first non-zero polynomial in the delay cell operator D;

Second means connected to said input means with second

modulo-2 adding means and delay means for receiving the data content of a second group of at least (n−1) data bits received on said data input and producing therefrom by said second modulo-2 adding means and delay means synchronously with each presentation of said first group to said (n−2) parallel data channels a second error correction bit to an nth parallel redundancy channel of said medium;

wherein for each of said (n−2) data channels a second subgroup of at least one bit forms part of a third group as expressed by a respective second non-zero polynomial in the delay cell operator D;

wherein for single channel error correction the quotient of the second polynomial in the delay cell operator D of a channel contributing to the second error correction bits and the corresponding first polynomial in the delay cell operator D is different from all said quotients associated to other channels;

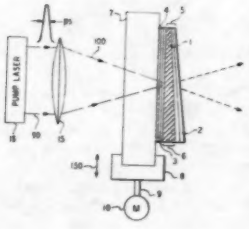
wherein for at least substantially half of the channels contributing to the second error correction bits the associated second polynomial has at least two terms while the total delay incurred in the generation of said second error correction bits is at most substantially equal to half the number of bit cells as the number of channels contributing to the second error correction bits.

4,395,769

TUNABLE SEMICONDUCTOR LASER

Theodoor C. Damen, Colts Neck, and Michel A. Duguay, Fair Haven, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 3, 1981, Ser. No. 240,206
Int. Cl.³ H01S *3/18*
U.S. Cl. 372—7 **16 Claims**



1. A laser which comprises:

a thin film (1) of semiconductor material disposed between mirrors (2 and 3) and

excitation means (15 and 16) for producing a population inversion in a predetermined volume of said semiconductor material

characterized in that

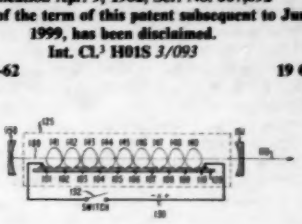
said thin film has a variation in thickness from a first end to a second end thereof and said excitation means provides high intensity excitation pulses having an ultra-short time duration, the time duration of said excitation pulse being less than or substantially equal to one picosecond, said thickness of said semiconductor material being less than or substantially equal to the distance at which the electron-hole plasma produced by said excitation pulse fills substantially all of said thickness of said material in said time duration, and at least one of said mirrors comprises at least one layer of material having a variation in thickness from a first end to a second end thereof.

4,395,770

SEGMENTED PLASMA EXCITATION-RECOMBINATION LIGHT SOURCE

William T. Silfvast, Holmdel; Leo H. Szeto, Howell, both of N.J., and Obert R. Wood, II, New York, N.Y., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation-in-part of Ser. No. 82,308, Oct. 5, 1979. This application Apr. 9, 1982, Ser. No. 367,092
The portion of the term of this patent subsequent to Jun. 22, 1999, has been disclaimed.
Int. Cl.³ H01S *3/093*
U.S. Cl. 372—62 **19 Claims**



1. A recombination laser comprising:

a resonant laser cavity (150, 151) containing a laser medium and energy abstracting means adapted to permit egress of lasing radiation therefrom,

excitation means (130) for producing said lasing radiation in said resonant laser cavity;

said excitation means comprising at least two conductor strips (101–110) having at least one gap, which at least one gap provides at least one intervening discharge path; and means for applying an electrical signal to said at least two conductor strips; and

a cell (125) for containing a background gas and in which said at least two strips are located;

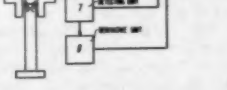
at least a portion of said at least two conductor strips being fabricated from a material which is converted into a plasma (141–149) as a result of the application of said electrical signal, which plasma cools and recombines to generate said lasing radiation (170).

4,395,771

METHOD AND APPARATUS FOR CONTROLLING PROCESS OF CASTING THIN WALLED INGOTS USING ELECTROSLAG MELTING PROCESS

Boris I. Medovar, ulitsa Anri Barbjusa, 22/26, kv. 109; Evgeny D. Gladky, ulitsa E. Potie, 9, kv. 89; Oleg P. Bondarenko, ulitsa Kreschatik, 15, kv. 36; Leonty V. Chekotilo, ulitsa Anri Barbjusa, 22/26, kv. 64; Valery I. Zayats, ulitsa E. Potie, 9, kv. 89; Sergei P. Egorov, ulitsa Nevskaya, 34, kv. 1, and Jury A. Skosnyagin, ulitsa Ilicha, 10/5, kv. 4, all of Kiev, U.S.S.R.

PCT No. PCT/SU79/00115, § 371 Date Sep. 30, 1980, § 102(e) Date Sep. 25, 1980, PCT Pub. No. WO80/01573, PCT Pub. Date Aug. 7, 1980
PCT Filed Nov. 19, 1979, Ser. No. 244,132
Claims priority, application U.S.S.R., Jun. 31, 1979, 2712297
Int. Cl.³ H05B *3/60, 7/148*
U.S. Cl. 373—49 **3 Claims**



2. An apparatus for controlling a process of casting thin

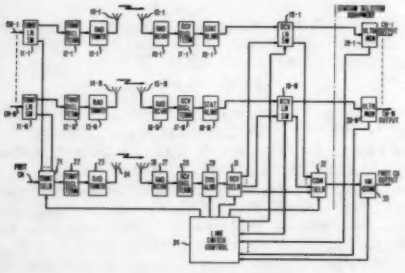
walled ingots using the electroslag melting method, comprising: a drive displacing a consumable electrode and maintaining the magnitude of the interelectrode gap constant; a control unit connected to said drive, forming a control action signal, and having an input; a melting current pick-up having outputs; a comparison unit having a first input connected to one of said outputs of said pick-up, a second input, and an output connected to said input of said control unit; a determination unit determining an averaged value of the melting current for a predetermined time interval, and having an input connected to one of said outputs of said pick-up and an output; a detecting unit detecting an amplitude of oscillations of the melting current relative to averaged values of the melting current, and having an input connected to said output of said determination unit and an output; a first derivative unit determining a derivative of the detected amplitude of oscillations of the melting current, and having an input connected to said output of said detecting unit and an output; a second derivative unit determining a derivative of the averaged value of the melting current, and having an input connected to said output of said determination unit and an output; and, a logic unit having inputs respectively connected to said outputs of said detecting unit, said first derivative unit and said second derivative unit, and an output connected to said second input of said comparison unit.

4,395,772

LINE PROTECTION SWITCH CONTROLLER

Warren C. Trested, Jr., East Hampstead, N.H., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 30, 1981, Ser. No. 259,006
Int. Cl.³ H04B *7/08*
U.S. Cl. 375—40 **8 Claims**



1. A transmission system (FIG. 1) having digital channels and clocking signals derived from each digital channel, the transmission system being capable of bridging one of a plurality of regular digital channels with a digital protection channel so both channels are carrying the same digital signal from a first location of the system; the transmission system comprising:

shifting means (29) for adjusting the relative delay of the digital signals between the protection channel and the impaired channel, said shifting means capable of being adjusted in fine steps fractionally related to a bit period and in coarse steps equal to a bit period;

detecting means (119) for indicating alignment of the adjusted relative delay of both digital channel signals to produce a data alignment output, said detecting means receiving clocking signals, one derived from each one of both channels, to produce a bit alignment output;

controlling means (FIG. 16) for providing bit and data alignment before issuing a switching control signal, said controlling means including first logic means for adjusting the shifting means in fine step in a first direction from an initial value to a first extreme value and then in the opposite direction from the first extreme value to the opposite extreme value, said first logic means responsive to the bit alignment output of the detecting means by stopping the adjustment of the shifting means when bit alignment is indicated, and second logic means for providing data alignment by adjusting the shifting means to produce coarse steps in one direction to an extreme value and coarse steps in the reverse direction to the opposite extreme value, said second logic means responsive to the data alignment output of the detecting means by stopping the adjustment when data alignment is indicated; and

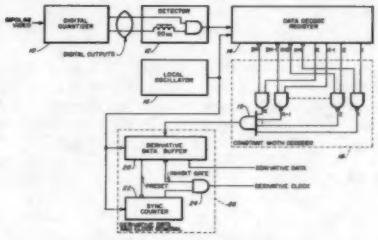
switching means (19), at a second location of the system remote from the first location, for substituting the digital signal of the protection channel for the one channel in response to said switching control signal after both bit alignment and data alignment are obtained.

4,395,773

APPARATUS FOR IDENTIFYING CODED INFORMATION WITHOUT INTERNAL CLOCK SYNCHRONIZATION

Constantinos Philippides, and William H. Zinger, both of Columbia, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 26, 1981, Ser. No. 267,122
Int. Cl.³ H04L *7/08*
U.S. Cl. 375—116 **8 Claims**



1. Self-synchronized apparatus for recognizing identifying codes comprising:

first circuit means for receiving video input signals and providing an output of validly time digital signals,

second circuit means coupled to said first circuit means for providing output data signals in response to a predetermined sequence of said digital signals, said second circuit means including a decode register which defines a valid mark as K high bits followed by K low bits where 2K is the capacity of said decode register, and providing an output of K high bits followed by K low bits, said second circuit means further including a constant width decoder coupled to said decode register for comparing the first K bits in a sequential, pairwise fashion with the inverse of the values of said second K bits, and

third circuit means coupled to said second circuit means for providing a derivative clock output in response to and synchronized with said outputs data signals.

4,395,774

LOW POWER CMOS FREQUENCY DIVIDER

Adolph K. Rapp, Los Gatos, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Jan. 12, 1981, Ser. No. 224,591
Int. Cl.³ H03K *23/08, 19/096*
U.S. Cl. 377—114 **2 Claims**

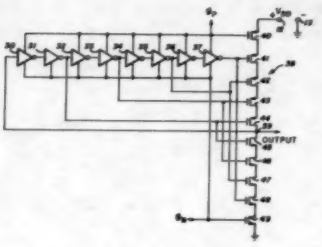
1. A CMOS frequency divider comprising:

an even number (K) greater than two of cascaded inverters, each one comprising first and second P channel transistors, third and fourth N channel transistors, means for coupling the source-drain circuits of said P and N channel

transistors in series across first and second power supply rails connectable to a source of operating power, means for coupling the gates of said second and third transistors to an inverter input terminal, means for coupling the drain electrodes of said second and third transistors to an inverter output terminal and clock means for alternately switching said first and fourth transistors between conductive and nonconductive states;

means for bypassing one of said first and fourth transistors in at least one of said inverters by connecting the respective drain to the respective source of said one transistor;

a combining clocked inverter having K/2 inputs coupled respectively to alternate outputs of said cascaded clocked inverters and an output coupled to the input of the first of



said cascaded clocked inverters, said combining clocked inverter comprising:

K/2 plus one P channel transistors and K/2 plus one N channel transistors, having their source-drain circuits coupled in series between said power supply rails;

means for coupling the gate electrodes of the P and N channel transistors that have their sources coupled directly respectively to said first and second power supply rails to said clock means for alternately switching said first and fourth transistors; and

means for coupling each of the gates of the remainder of said P channel transistors to a corresponding one of the remainder of said N channel transistor gates, to provide said K/2 inputs.

4,395,775

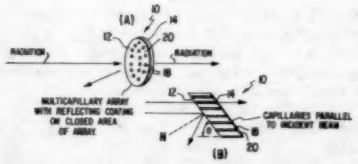
OPTICAL DEVICES UTILIZING MULTICAPILLARY ARRAYS

James R. Roberts, 12512 W. Old Baltimore Rd., Boyds, Md. 20720; Thomas J. McIlrath, 5944 Westchester Park Dr., College Park, Md. 20740, and Thomas B. Lucatorto, 3600 Van Ness St., NW., Washington, D.C. 20008

Filed Jul. 14, 1980, Ser. No. 168,700

Int. Cl.³ A61N 5/10; G02B 5/00, 27/14

U.S. Cl. 378—145 **4 Claims**



1. An optical device for splitting an incoming beam of radiation comprising a two-dimensional multicapillary array including a plate having a plurality of pores extending therethrough parallel to the incoming beam where said pores comprise an open area of the plate which transmits a portion of the incoming beam and the remaining area of said plate surrounding said pores comprises a closed area which is provided with a planar coating which reflects the remaining portion of the incoming beam where the normal to said closed area is disposed at an angle with respect to the incoming beam.

4,395,776

TRANSMITTER HAVING A PHASE SYNCHRONIZING SYSTEM

Yukio Naito, Tokyo; Masahide Tamura, Chigasaki, and Shigeo Takahashi, Fujisawa, all of Japan, assignors to Toyo Communication Equipment Co., Ltd., Kanagawa, Japan

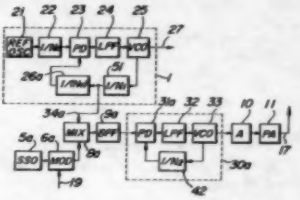
PCT No. PCT/JP80/00224, § 371 Date May 27, 1981, § 102(e) Date May 22, 1981, PCT Pub. No. WO81/00942, PCT Pub. Date Apr. 2, 1981

PCT Filed Sep. 26, 1980, Ser. No. 269,029

Claims priority, application Japan, Sep. 27, 1979, 54-123196

Int. Cl.³ H04B 1/04

U.S. Cl. 455—119 **9 Claims**



1. A transmitter comprising a frequency mixer to one input of which is applied an output of a phase synchronizing type digital frequency synthesizer and to another input of which is applied an output of a phase or frequency modulator coupled to a side step oscillator, the output from said frequency mixer going to a bandpass filter, and from there to amplifying means via a phase synchronizing system having a phase detector connected to said bandpass filter and series connected to a lowpass filter and a voltage controlled oscillator as a main route, in which said voltage controlled oscillator is connected to said amplifying means, and a feedback route from said voltage controlled oscillator to said phase detector, said transmitter having in combination therewith a first fixed frequency divider between said phase synchronizing type digital frequency synthesizer for connecting said synthesizer to said frequency mixer, and a second fixed frequency divider connected in said feedback route of said phase synchronizing system.

4,395,777

DOUBLE SUPERHETERODYNE RECEIVER

Ryuji Oki, and Takashi Ebisawa, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jan. 8, 1981, Ser. No. 223,319

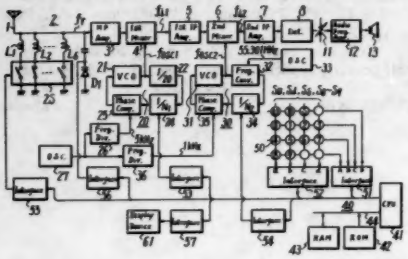
Claims priority, application Japan, Jan. 12, 1980, 55-2297; Jan. 18, 1980, 55-4435[U]

Int. Cl.³ H04B 1/26

U.S. Cl. 455—183 **13 Claims**

11. In a double superheterodyne receiver of the type comprising means for receiving an incoming RF signal, first local oscillator means providing a first local oscillator signal at a first local oscillator frequency, first mixer means for mixing said incoming RF signal with said first local oscillator signal to obtain a first IF signal, second local oscillator means providing a second local oscillator signal at a second local oscillator frequency, second mixer means for mixing said first IF signal with said second local oscillator signal to obtain a second IF signal, detecting means for detecting information carried on said second IF signal, and control means for controlling the respective frequencies of said first and said second local oscilla-

tor signals; wherein said first and second local oscillator means each include digitally controlled frequency generator means for providing said first and second local oscillator signals at frequencies that are substantially linear functions of first and second digital values N_1 and N_2, respectively; and wherein said control means includes automatic logic circuitry for providing said digital values N_1 and N_2 to the respective digitally controlled frequency generators of said first and second local oscillator means as a function of selecting a desired frequency of said incoming signal, with the second digital value N_2 being provided from a perdetermined range of integers so that the second local oscillator frequency remains in a corresponding



range of frequencies, with a unit change in the first digital value N_1 corresponding to a frequency change equal to said corresponding range of frequencies; the improvement wherein said control means includes frequency selection means interfaced with said logic circuitry for selecting said desired frequency, with said logic circuitry providing said second digital value N_2 such that when the latter is at an end of its predetermined range, said logic circuitry carries out a successive RF frequency change by automatically circulating said second digital value N_2 to the other end of its predetermined range and simultaneously changing said first digital value N_1 by a unit increment.

4,395,778

UNDESIRED SIGNAL CANCELLER

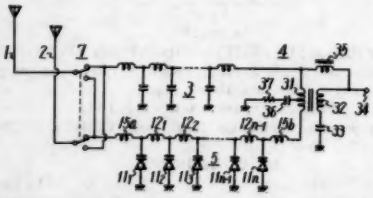
Yasuo Osada, Tokyo; Takeo Nakagawa, Atsugi, and Kimitake Utsunomiya, Sagamihara, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Nov. 6, 1980, Ser. No. 204,551

Claims priority, application Japan, Nov. 9, 1979, 54-145679; Nov. 9, 1979, 54-145680

Int. Cl.³ H04B *1/18*

U.S. Cl. 455—276 **10 Claims**



1. An undesired signal canceller for a radient energy receiver comprising first and second antennas spaced a distance (d) apart, a phase compensation circuit connected to said first antenna, a variable phase shift circuit connected to said second antenna, said variable phase shift circuit comprising a plurality of series connected inductors wherein adjacent ones of said inductors are magnetically coupled together and a plurality of voltage variable capacitors with adjacent ones of said plurality of voltage variable capacitors connected between ground and the junction points between adjacent ones of said series connected inductors, adding means connected to the outputs of said phase compensation circuit and said variable phase shift circuit and means for supplying a variable D.C. voltage to said voltage variable capacitors to control their capacitance.

4,395,779

JAMMING WAVE REJECTING DEVICE

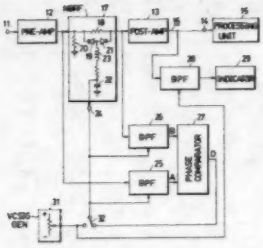
Teruhisa Fujino, Kawasaki; Fujio Osawa, Tama; Kenichi Chiwaki, Chiba, and Sadatoshi Narazaki, Tokyo, all of Japan, assignors to Kabushiki Kaisha Koden Seisakusho, Tokyo, Japan

PCT No. PCT/JP79/00326, § 371 Date Aug. 12, 1981, § 102(e) Date Aug. 12, 1981, PCT Pub. No. WO81/01930, PCT Pub. Date Jul. 9, 1981

PCT Filed Dec. 26, 1979, Ser. No. 293,642

Int. Cl.³ H04B *1/12*

U.S. Cl. 455—306 **8 Claims**



1. A jamming wave rejecting device comprising a narrow-band rejection filter which is inserted in series in a received signal path and the rejection frequency of which is varied by a control signal; first and second band-pass filters which are connected to the input and outout sides of the narrow-band rejection filter, respectively, and which have pass center frequencies substantially equal to the rejection frequency of the narrow-band rejection filter and have substantially the same filter characteristic; a phase comparator for detecting the phase difference between the outputs from the first and second band-pass filters; a variable control signal generator for generating a control signal; a third band-pass filter which is connected to the output side of the abovesaid narrow-band rejection filter and the pass center frequency of which is controlled by the control signal from the abovesaid control signal generator; an indicator which is connected to the output side of the third band-pass filter for displaying the intensity of the output therefrom; and a change-over switch which changes over the output from the abovesaid phase comparator and the output from the abovesaid control signal generator and applies one of them as the control signal to the abovesaid narrow-band rejection filter.

4,395,780

SERVICE-INTEGRATED COMMUNICATION TRANSMISSION AND EXCHANGE SYSTEM

Lothar Gohm, and Klaus Krull, both of Weissach, Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs-GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Jun. 18, 1981, Ser. No. 275,047

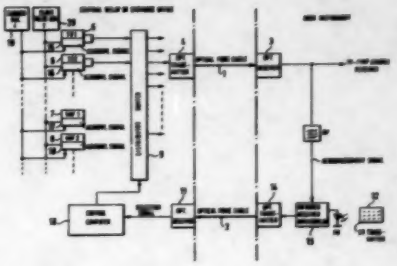
Claims priority, application Fed. Rep. of Germany, Jun. 18, 1980, 3022725

Int. Cl.³ H04N *7/18*; H04B *9/00*

U.S. Cl. 455—607 **6 Claims**

1. In a service-integrated communication transmission and exchange system for audio, video and data services, said system including a central exchange station for supplying selected services and a plurality of user equipments connected to said central exchange station by means of optical fiber cables and associated optical transmitters and receivers, said user equip-

ments being equipped with means for transmitting a selection signal to said exchange station to select certain desired services and their programs to be transmitted by said exchange station over likewise selectable transmission channels and for receiving the transmitted programs, the improvement wherein said exchange station further includes an acknowledgment means for producing a signal acknowledging receipt of a selection signal from a user equipment and means for transmitting the acknowledging signal to the associated user equipment; wherein said means for producing said acknowledgment signal comprises means for keying in or out a carrier frequency, which is outside of the signal frequency range of the selectable services, according to a code representing the acknowledgment signal being transmitted; wherein said means for transmitting said acknowledgment signal to said user equipment includes means for combining same with the signals of the selected program being transmitted by said exchange station; and wherein said user equipment includes means for receiving the transmitted acknowledgment signal including means for detecting the acknowledgment signal and displaying same on a display device.

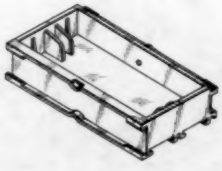


DESIGNS

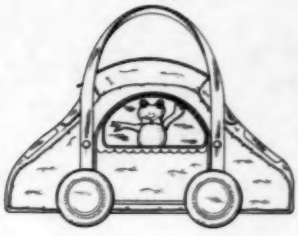
JULY 26, 1983

269,824
HOOK FASTENER FOR GARMENTS
Yoshihiro Kanzaka, Nyuzen, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan
Filed Jan. 27, 1981, Ser. No. 229,001
Claims priority, application Japan, Jul. 29, 1980, 55-30797
Term of patent 14 years
Int. Cl. D02—*07*
U.S. Cl. D2—418

269,825
COUPLING ADAPTOR FOR A MAGNETIC TAPE CASSETTE ACCOMMODATING CASE
Hideo Shirako, Hachioji; Shoichi Saito, Tokyo; Terumasa Wada, Hachioji, and Koki Yamamoto, Omiya, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan
Filed May 7, 1981, Ser. No. 261,564
Claims priority, application Japan, Nov. 11, 1980, 55-47126
Term of patent 14 years
Int. Cl. D3—*02, 99*
U.S. Cl. D3—35



269,826
HANDBAG
Bonnie H. C. Ko, 9702 Debbie La., Houston, Tex. 77038
Filed Jul. 29, 1981, Ser. No. 288,050
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—44

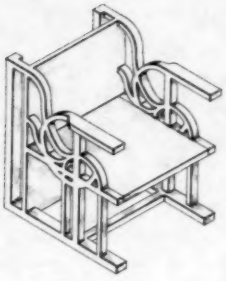


269,827
ANGLE BROOM
Frank Clark, Girard, Pa., assignor to Tantera, Inc., Girard, Pa.
Filed May 13, 1981, Ser. No. 263,104
Term of patent 14 years
Int. Cl. D4—*01*
U.S. Cl. D4—03

269,828
STEP STOOL
Leslie C. Greene, 12245 Rockcrest Rd., Lakeside, Calif. 92040
Filed Mar. 2, 1981, Ser. No. 239,526
Term of patent 14 years
Int. Cl. D6—*05*
U.S. Cl. D6—33

269,829
CHAIR
Mike T. Claman, New York, N.Y., assignor to Lewittes Furniture Enterprises, Inc., New York, N.Y.
Filed Feb. 20, 1981, Ser. No. 236,316
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—57

269,830
CHAIR OR SIMILAR ARTICLE
Klaas Nijhuis, 2600 San Leandro Blvd., San Leandro, Calif. 94578
Filed Jun. 15, 1981, Ser. No. 273,668
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—68



269,831
MOLDED SHELL STACK CHAIR
Barry W. Crone, Kansas City, Mo., assignor to Fixtures Manufacturing Corporation, Kansas City, Mo.
Filed Nov. 28, 1980, Ser. No. 211,462
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—75

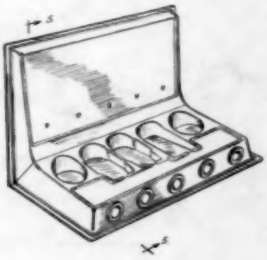
269,832
CHAIR
Frank M. Crane, Belgrade Rd., Oakland, Me. 04963
Filed Jun. 8, 1981, Ser. No. 271,436
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—*76*

269,833
MULTIPLE KEY HOLDER
Wayne L. Chubb, Box 531, Beverly Shores, Ind. 46301
Filed May 13, 1981, Ser. No. 263,302
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—114

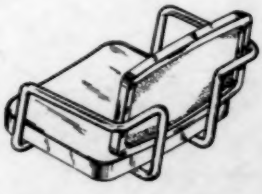
269,834
OCCASIONAL TABLE
Bruce N. Lee, 19 Columbia Ave., Trenton, N.J. 08618
Filed May 4, 1981, Ser. No. 260,644
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—146

269,835
BOTTLE RETAINING SUPPORT RACK
Harry P. Kaabh, Winston-Salem, N.C., assignor to Consolidated Foods Corporation, Winston-Salem, N.C.
Filed Mar. 17, 1981, Ser. No. 244,829
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—181

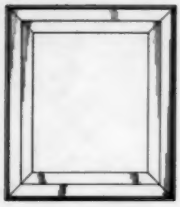
269,836
DISPLAY STAND FOR MASSAGE IMPLEMENTS
Irs Pruzan, Cook County, Ill., assignor to Associated Mills, Inc., Chicago, Ill.
Filed Jul. 25, 1980, Ser. No. 172,435
Term of patent 14 years
Int. Cl. D06—*04*
U.S. Cl. D6—188



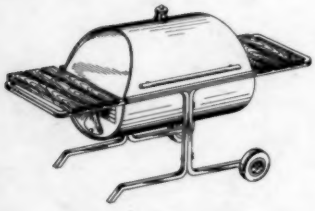
269,837
COMBINED SEAT AND BACKREST UNIT
Edsel E. Murry, Rte. 1, Box 271-A, Christiana, Tenn. 37037
Filed Feb. 9, 1981, Ser. No. 232,875
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—191



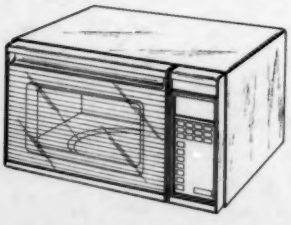
269,838
PICTURE FRAME
Richard C. Altonaga, New York, N.Y., assignor to New Hermes Incorporated, New York, N.Y.
Filed Mar. 20, 1981, Ser. No. 245,865
Term of patent 14 years
Int. Cl. D6—*07*
U.S. Cl. D6—242



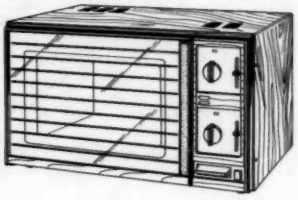
269,839
BARBECUE GRILL
John H. Givens, III, 2456 N. Grant, Milwaukee, Wis. 53210
Filed Dec. 16, 1981, Ser. No. 331,122
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D7—334



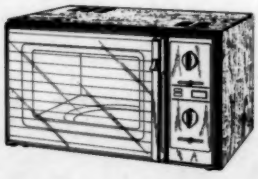
269,840
MICROWAVE OVEN
Michio Tanaka, Nara; Masamichi Yamamura, Osaka, and Toshio Harada, Nara, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Dec. 9, 1981, Ser. No. 329,141
Claims priority, application Japan, Jul. 2, 1981, 56-29192
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—351



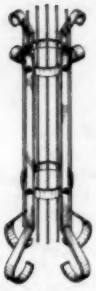
269,841
MICROWAVE OVEN
Masamichi Yamamura, Osaka, and Toshio Harada, Nara, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Dec. 9, 1981, Ser. No. 329,105
Claims priority, application Japan, Jun. 19, 1981, 56-26985
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—351



269,842
MICROWAVE OVEN
Masamichi Yamamura, Osaka, and Toshio Harada, Nara, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Dec. 9, 1981, Ser. No. 329,106
Claims priority, application Japan, Jun. 19, 1981, 56-26984
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—351

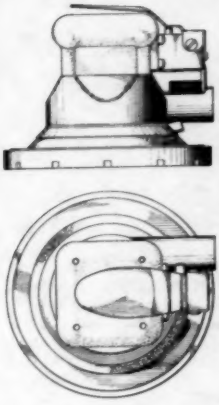


269,843
TREE GUARD
Robert E. Haggard, Everett, Wash., assignor to Merry Haggard, Snohomish, Wash.
Division of Ser. No. 158,937, Jun. 12, 1980. This application Sep. 9, 1982, Ser. No. 416,109
Term of patent 14 years
Int. Cl. D11—*99*
U.S. Cl. D8—01



269,844
DEVICE FOR EXTRACTING SOIL CORES FOR LABORATORY ANALYSIS
John V. Hackerson, Beardstown, Ill., assignor to Mabel J. Hackerson, Beardstown, Ill., a part interest
Filed Jan. 12, 1981, Ser. No. 224,375
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—7

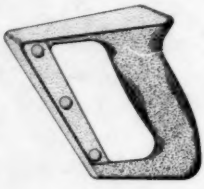
269,845
ABRADING TOOL
Alma A. Hutchins, Pasadena, Calif., assignor to Hutchins Manufacturing Co., Pasadena, Calif.
Filed Oct. 22, 1980, Ser. No. 199,452
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—62



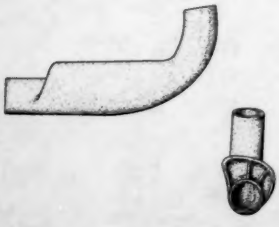
269,846
AIR GRINDER
Osamu Izumisawa, 24-10, 2-chome asahicho, Nerimaku, Tokyo, Japan
Filed Mar. 16, 1981, Ser. No. 244,328
Claims priority, application Japan, Sep. 15, 1980, 55-37832
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—62

269,847
AIR GRINDER
Osamu Izumisawa, 24-10, 2-chome asahicho, Nerimaku, Tokyo, Japan
Filed Mar. 16, 1981, Ser. No. 244,329
Claims priority, application Japan, Sep. 15, 1980, 55-37833
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—62

269,848
HANDLE FOR A SAW BLADE
Laird F. Covey, Easton, Conn., assignor to The Stanley Works, New Britain, Conn.
Filed Sep. 12, 1980, Ser. No. 186,676
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—97



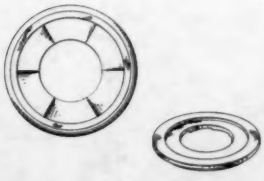
269,849
BICYCLE HANDLEBAR GRIP
Clyde R. Morgan, 210 Roadrunner Dr., Sedona, Ariz. 86336
Filed Nov. 28, 1980, Ser. No. 211,298
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D8—303



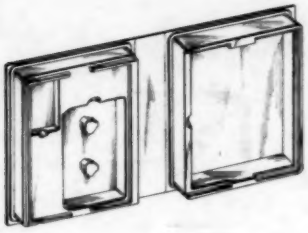
269,850
HANDLEBAR GRIP
James M. Preisler, Mound, and Alwin J. Stahel, Saint Paul, both of Minn., assignors to Drag Specialties, Inc., Minneapolis, Minn.
Filed Jul. 22, 1981, Ser. No. 286,014
Term of patent 14 years
Int. Cl. D10—*11*
U.S. Cl. D8—303

269,851
RETAINER CLIP FOR PIPES, RODS AND OTHER ELONGATED BODIES OR THE LIKE
Shigeru Kimura, Kamakura, Japan, assignor to Nifco Inc., Tokyo, Japan
Filed Dec. 1, 1980, Ser. No. 211,496
Claims priority, application Japan, May 31, 1980, 55-21590
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—356

269,852
LOCK WASHER
Bengt O. Frieberg, 869 Picacho, La Habra Heights, Calif. 90631
Division of Ser. No. 131,938, Mar. 21, 1980, Pat. No. Des. 263,792. This application Oct. 13, 1981, Ser. No. 310,532
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—399



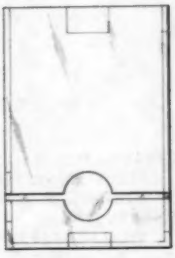
269,853
PACKAGING CONTAINER FOR PROMOTIONAL MATERIAL
Rod Springett, London, England, assignor to The Designers & Art Directors Association of London, London, England
Filed Apr. 29, 1981, Ser. No. 258,629
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—326



269,854
PACKAGING CONTAINER FOR FOOD OR THE LIKE
Nicholas D. Commisso, Victor, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.
Continuation of Ser. No. 810,556, Jun. 27, 1977. This application Mar. 31, 1980, Ser. No. 135,583
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—347

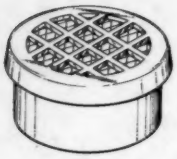
269,855
PACKAGING CONTAINER
Vincent E. Fortuna, Garden Grove, Calif., assignor to Cosden Technology, Inc., Dallas, Tex.
Filed Apr. 13, 1981, Ser. No. 253,813
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—398

269,856
TRANSPARENT DISPENSER BOX
Raymond F. Kuta, West Islip, N.Y., assignor to Clairol Incorporated, New York, N.Y.
Filed Dec. 18, 1980, Ser. No. 217,930
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—418



269,857
ELECTRONIC CLOCK/TIMER
John W. Goodin, Long Beach; Edward E. Albright, Santa Ana, an.. Amy K. Tamura, Long Beach, all of Calif., assignors to Dart Industries Inc., Northbrook, Ill.
Filed Jul. 29, 1981, Ser. No. 287,961
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—15

269,858
COMPACT RADON DETECTOR UNIT
H. Ward Alter, Walnut Creek, Calif., assignor to Terradex Corp., Walnut Creek, Calif.
Filed Feb. 12, 1981, Ser. No. 233,818
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—47

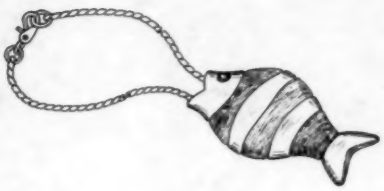


269,859
SENSING ANTENNA HOUSING FOR A THEFT DETECTION SYSTEM
Ariel G. Paladini, Norregade 23, Roskilde, Denmark (4000)
Filed Nov. 19, 1980, Ser. No. 208,293
Term of patent 14 years
Int. Cl. D10—*05*
U.S. Cl. D10—121

269,860
DISPLAY PANEL FOR TIMEPIECE
Kenji Tanikawa; Noritaka Uchihori, and Susumu Suzuki, all of Suwa, Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan
Filed Apr. 20, 1981, Ser. No. 255,418
Claims priority, application Japan, Oct. 22, 1980, 55-44068
Term of patent 14 years
Int. Cl. D10—*07*
U.S. Cl. D10—125

269,861
VESTMENTAL PIN
Shadrack Brown, Jr., 3431 Kershaw Rd. NW., Roanoke, Va. 24017
Filed Jun. 10, 1981, Ser. No. 272,354
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—76

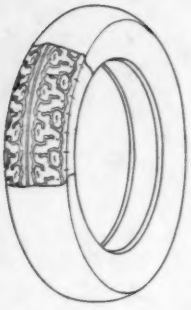
269,862
SEGMENTED FISH-SHAPED PENDANT OR SIMILAR ARTICLE
Muriel Meyer, Long Beach, N.Y., assignor to General Mills Products Corp., Minneapolis, Minn.
Filed Apr. 22, 1981, Ser. No. 256,445
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—82



269,863
SEGMENTED HEART-SHAPED PENDANT OR SIMILAR ARTICLE
Muriel Meyer, Long Beach, N.Y., assignor to General Mills Products Corp., Minneapolis, Minn.
Filed Apr. 22, 1981, Ser. No. 256,446
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—83

269,864
DERAILLEUR FOR A BICYCLE
Satoshi Watanabe, Sakai, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan
Filed Feb. 5, 1981, Ser. No. 231,854
Claims priority, application Japan, Aug. 12, 1980, 55-33121
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—124

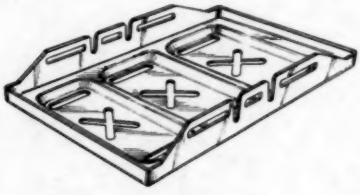
269,865
TIRE FOR A VEHICLE WHEEL
Hiroshi Tomoda, Ashiya, Japan, assignor to Dunlop Limited, London, England
Filed Jan. 22, 1981, Ser. No. 227,526
Claims priority, application Japan, Aug. 27, 1980, 55-35409
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—143



269,866
TIRE CHAIN FOR SLIP PREVENTION OF VEHICLE
Kare Espedalen, Grenseveien 5, N-3290 Stavern, Norway
Filed Mar. 11, 1980, Ser. No. 129,322
Claims priority, application Norway, Sep. 20, 1979, 60039
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—154

269,867
BRAKE FOR A BICYCLE
Satoshi Watanabe, Sakai, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan
Filed Jan. 26, 1981, Ser. No. 228,169
Claims priority, application Japan, Aug. 5, 1980, 55-31852
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—179

269,868
BATTERY TRAY
Samuel M. Seltzer, and Saul Dennison, both of Livingston, N.J., assignors to Allison Corporation, Livingston, N.J.
Filed Apr. 6, 1981, Ser. No. 251,511
Term of patent 14 years
Int. Cl. D13—*02*
U.S. Cl. D13—10

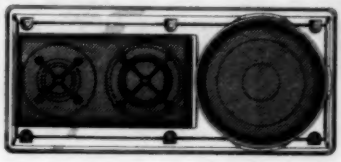


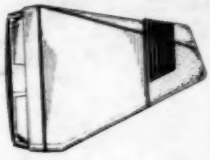
269,869
LOUDSPEAKER
Hideyuki Matsubara, Tokyo, Japan, assignor to Pioneer Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 4, 1981, Ser. No. 240,583
Claims priority, application Japan, Sep. 13, 1980, 55-37885
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—30

269,870
LOUDSPEAKER
Takekazu Iijima, Tokyo, Japan, assignor to Pioneer Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 24, 1981, Ser. No. 247,147
Claims priority, application Japan, Nov. 8, 1980, 55-46723
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—30

269,871
LOUDSPEAKER
Hideaki Ishizaki, Tokyo, Japan, assignor to Pioneer Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 4, 1981, Ser. No. 240,508
Claims priority, application Japan, Sep. 5, 1980, 55-36654
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—34

269,872
LOUDSPEAKER
Hideaki Ishizaki, Tokyo, Japan, assignor to Pioneer Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 4, 1981, Ser. No. 240,509
Claims priority, application Japan, Sep. 5, 1980, 55-36655
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—34

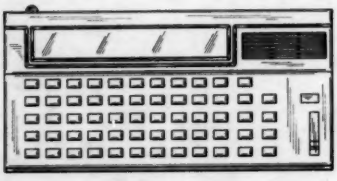


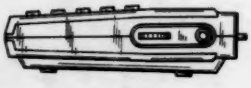


269,873
PORTABLE RADIO TELEPHONE OR SIMILAR ARTICLE
Albert L. Nagele, Wilmette, and Kenneth W. Larson, Elmhurst, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Feb. 4, 1981, Ser. No. 231,552
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—53

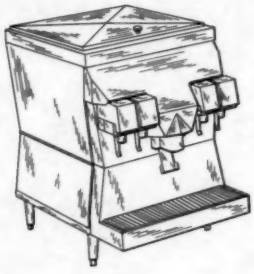
269,874
TELEPHONE HANDSET
Robert R. Huntington, Lynchburg, Va., assignor to General Electric Company, Lynchburg, Va.
Filed Feb. 13, 1981, Ser. No. 234,154
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—63

269,875
ELECTRONIC TRANSLATOR
Katsuhiro Ishida, Osaka, Japan, assignor to Sharp Corporation, Osaka, Japan
Filed Apr. 24, 1981, Ser. No. 257,372
Claims priority, application Japan, Oct. 31, 1980, 55-45834
Term of patent 14 years
Int. Cl. D14—*02*; D18—*01*
U.S. Cl. D14—100

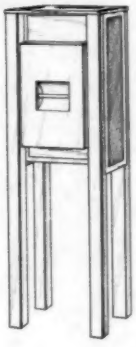




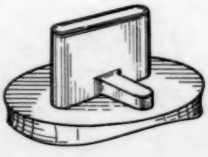
269,876
SANITARY COUNTERTOP MACHINE FOR STORING AND DISPENSING PARTICULATE ICE AND FOR DISPENSING BEVERAGE
Charles M. Lents, Leon Valley, Tex., assignor to Stainless IceTainerCompany, San Antonio, Tex.
Filed Mar. 23, 1981, Ser. No. 246,469
Term of patent 14 years
Int. Cl. D15—*07, 08*
U.S. Cl. D15—80



269,877
REFRIGERATOR CABINET SUITABLE FOR USE ON RAILROADS AND IN OTHER VEHICLES SUBJECT TO CONSIDERABLE VIBRATION
Shlomo Beitner, Tel-Aviv, Israel, assignor to Bipol Ltd., Tel-Aviv, Israel
Filed Feb. 9, 1981, Ser. No. 232,631
Term of patent 14 years
Int. Cl. D15—*07*
U.S. Cl. D15—81



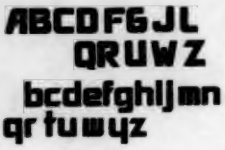
269,878
LENS BLOCK
Howard E. Noble, Jr., Bettendorf, Iowa, assignor to Cole National Corporation, Cleveland, Ohio
Filed Jul. 10, 1981, Ser. No. 253,705
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D15—124



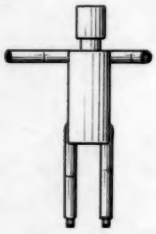
269,879
TIRE CHANGER
Jim L. Holladay, Nashville, and Charles G. Leeper, Antioch, both of Tenn., assignors to Hennessy Industries, Inc., Elk Grove Village, Ill.
Filed May 29, 1981, Ser. No. 268,200
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D15—199

269,880
CAMERA TRIPOD
Osamu Iwasaki, Tokorozawa, Japan, assignor to Slik Tripod Co., Ltd., Saitama, Japan
Filed Mar. 2, 1981, Ser. No. 239,495
Claims priority, application Japan, Aug. 29, 1980, 55-35265
Term of patent 14 years
Int. Cl. D16—*05*
U.S. Cl. D16—45

269,881
FONT OF TYPE
Ethan Hirsh, 12202 Meadowdale Dr., Stafford, Tex. 77477, and Michael L. Taylor, 23026 Briarcreek, Spring, Tex. 77373
Filed Nov. 7, 1980, Ser. No. 204,869
Term of patent 14 years
Int. Cl. D18—*03*
U.S. Cl. D18—24



269,882
MARTIAL ARTS MANNEQUIN
Floyd J. Leverton, 39056 Dianron Rd., Palmdale, Calif. 93550
Filed Feb. 12, 1981, Ser. No. 233,871
Term of patent 14 years
Int. Cl. D19—*07*
U.S. Cl. D19—59



269,883
COMBINED CARRYING CASE AND TETHERED TOYS
Kathryn A. Cavnar, Covington, Ky.; Charles E. Ligon, and Rickie T. Bedell, both of Cincinnati, Ohio, assignors to CPG Products Corp., Minneapolis, Minn.
Filed Oct. 5, 1981, Ser. No. 308,327
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—59

269,884
TOY RATTLE
Shinroku Nakao, Yokohama; Yoshiyasu Ishii, and Taira Hanashima, both of Tokyo, all of Japan, assignors to Combi Co., Ltd., Tokyo, Japan
Filed Apr. 13, 1981, Ser. No. 253,500
Claims priority, application Japan, Nov. 5, 1980, 55-46254
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—65

269,885
TOY RATTLE
Shinroku Nakao, Yokohama; Yoshiyasu Ishii, and Taira Hanashima, both of Tokyo, all of Japan, assignors to Combi Co., Ltd., Tokyo, Japan
Filed Aug. 19, 1981, Ser. No. 294,276
Claims priority, application Japan, Feb. 27, 1981, 56-7858
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—65

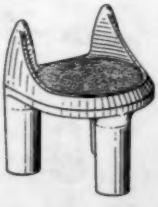
269,886
TOY RATTLE
Shinroku Nakao, Yokohama; Yoshiyasu Ishii, and Taira Hanashima, both of Tokyo, all of Japan, assignors to Combi Co., Ltd., Tokyo, Japan
Filed Aug. 19, 1981, Ser. No. 294,277
Claims priority, application Japan, Jun. 17, 1981, 56-26336
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—65

269,887
ANIMAL FIGURE TOY
Shinroku Nakao, Yokohama; Yoshiyasu Ishii, and Susumu Matsumoto, both of Tokyo, all of Japan, assignors to Combi Co., Ltd., Tokyo, Japan
Filed May 18, 1981, Ser. No. 265,112
Claims priority, application Japan, Jan. 27, 1981, 56-2643
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—162

269,888
DOLL
Joretta Rupp, R.R. 2, Box 80E, Wadesville, Ind. 47638
Filed Jun. 24, 1981, Ser. No. 276,912
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—173

269,889
PHYSICAL EXERCISE SUPPORT
Thomas E. Beer, 9206 Holland Ave., Durham, Calif. 95938
Filed Jan. 12, 1981, Ser. No. 224,704
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—191

269,890
FOOTBALL KICKING TEE
Jan Stenerud, Overland Park, Kans., assignor to Jan Stenerud and Company Inc., Shawnee Mission, Kans.
Filed Apr. 28, 1981, Ser. No. 258,422
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—209

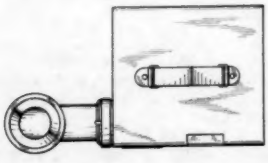


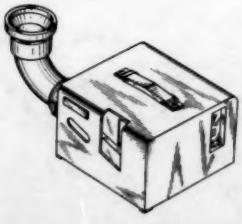
269,891
BALL CATCHING AND THROWING DEVICE
Homer C. Amos, Palm Springs, Calif., assignor to Brunswick Corporation, Skokie, Ill.
Filed Jun. 10, 1980, Ser. No. 158,331
The portion of the term of this patent subsequent to Jun. 28, 1997, has been disclaimed.
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—210

269,892
BALL CATCHING AND THROWING DEVICE
Homer C. Amos, Palm Springs, Calif., assignor to Brunswick Corporation, Skokie, Ill.
Filed Jun. 10, 1980, Ser. No. 158,333
The portion of the term of this patent subsequent to Jun. 28, 1997, has been disclaimed.
Term of patent 14 years
Int. Cl. D21—*01, 210*
U.S. Cl. D21—210

269,893
BALL CATCHING AND THROWING DEVICE
Homer C. Amos, Palm Springs, Calif., assignor to Brunswick Corporation, Skokie, Ill.
Filed Jun. 10, 1980, Ser. No. 158,336
The portion of the term of this patent subsequent to Jun. 28, 1997, has been disclaimed.
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—210

269,894
TENNIS BALL PROJECTOR FOR TRAINING PURPOSES
Tsugio Hirabayashi, Tokyo, and Michio Nakai, Ebina, both of Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Dec. 15, 1980, Ser. No. 216,183
Claims priority, application Japan, Jun. 19, 1980, 55-24586
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—210





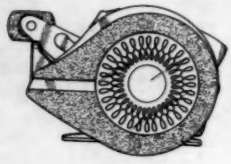
269,895
HANDGUN GRIP
John E. Bianchi; Richard D. E. Nichols, both of Fallbrook; Frank A. Pachmayr, Los Angeles; Jack R. Farrar, Whittier, and Frank W. Farrar, Los Alamitos, all of Calif., assignors to Bianchi Leather Products, Inc., Temecula, Calif.
Filed Mar. 5, 1981, Ser. No. 240,809
Term of patent 14 years
Int. Cl. D22—*01*
U.S. Cl. D22—1

269,896
PISTOL
Louis W. Seecamp, 487 Wolcott La., Orange, Conn. 06477
Filed Jun. 26, 1981, Ser. No. 277,722
Term of patent 14 years
Int. Cl. D22—*01*
U.S. Cl. D22—1

269,897
FLY TRAP
Charles B. Duff, Scottsdale, Ariz., assignor to Farnam Companies, Inc., Phoenix, Ariz.
Filed Nov. 20, 1980, Ser. No. 208,566
Term of patent 14 years
Int. Cl. D22—*06*
U.S. Cl. D22—19

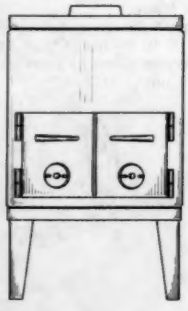
269,898
LINE GUIDE
Shigeru Yamamoto, Higashikurume, Japan, assignor to Daiwa Seiko, Inc., Tokyo, Japan
Filed Apr. 6, 1981, Ser. No. 251,604
Claims priority, application Japan, Oct. 4, 1980, 55-41297
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—24

269,899
FISHING REEL
Takeshi Shohoji, Funabashi, and Masakazu Sakamoto, Fukuyama, both of Japan, assignors to Ryobi Ltd., Hiroshima, Japan
Filed Apr. 8, 1981, Ser. No. 252,485
Claims priority, application Japan, Oct. 16, 1980, 55-43302
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—25

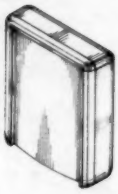


269,900
LURE FOR FISHING
Howard P. Shiverdecker, Park City South, Lot 132, Bloomington, Ill. 61701
Filed Mar. 5, 1981, Ser. No. 240,820
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—28

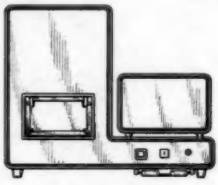
269,901
STOVE
Winston J. F. Sorensen, Rudkobing, Denmark, assignor to Danish Stove Association, ApS, Odense, Denmark
Filed Nov. 19, 1980, Ser. No. 208,291
Claims priority, application Denmark, May 23, 1980, 409/80
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—97



269,902
COMBINED AIR FRESHENER AND PHOTO FRAME OR SIMILAR ARTICLE
Bradford L. Edwards, 4653 - 41st Ave. NE., Seattle, Wash. 98105
Filed Dec. 15, 1980, Ser. No. 216,517
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—150

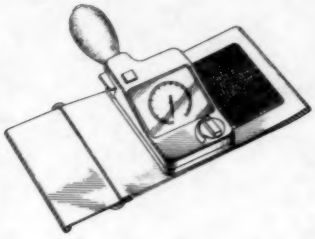


269,903
VACUUM FIRING PORCELAIN FURNACE
Robert S. Quandt, Libertyville, Ill., assignor to Sybron Corporation, Rochester, N.Y.
Filed Oct. 24, 1980, Ser. No. 200,332
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D24—08



269,904
ENDOSCOPE
Hideki Shimonaka, Sagamihara, Japan, assignor to Olympus Optical Company Ltd., Tokyo, Japan
Filed Mar. 30, 1981, Ser. No. 249,184
Claims priority, application Japan, Dec. 17, 1980, 55-52660
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—18

269,905
OCCLUSIVE SPHYGMANOMETER FOR THE MEASURING OF ARTERIAL BLOOD PRESSURE
Ulf S. Tamm, 122 Ch. de la Montague, 1224 Chene Bougeries, Switzerland
Filed Feb. 18, 1981, Ser. No. 235,598
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—21

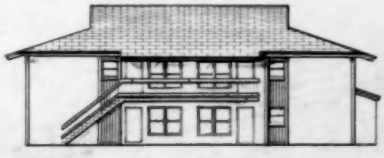


269,906
BABY BOTTLE MEDICANT DEVICE
Nicholas P. Cerasari, 1103 Spruce Ave., Wilmington, Del. 19805
Filed Sep. 24, 1980, Ser. No. 190,436
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D24—47

269,907
INCONTINENCE GARMENT
David P. Tong, Nuneaton, England, assignor to Humanicare International Inc., East Brunswick, N.J.
Filed Nov. 10, 1980, Ser. No. 205,715
Term of patent 14 years
Int. Cl. D24—*99*; D2—*01*
U.S. Cl. D24—50

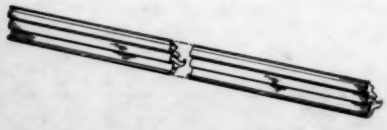
269,908
WALKING SPLINT
Hugh W. Payton, 36 S. Main St., Jeffersonville, Ohio 43128
Filed Aug. 25, 1980, Ser. No. 182,274
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D24—64

269,909
MULTIPLE-OCCUPANCY RESIDENTIAL BUILDING OR SIMILAR ARTICLE
John S. Obarowski, Hollywood, Fla., assignor to Development Corporation of America, Hollywood, Fla.
Filed Apr. 9, 1981, Ser. No. 252,613
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—23



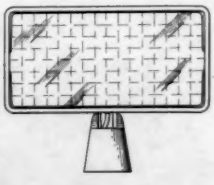
269,910
COMBINATION ARTICULATION RAIL AND CONNECTING BAR FOR SCREEN WALLS AND SIMILAR ARTICLES
Ake K. Johansson, Strömstad, Sweden
Filed Mar. 9, 1981, Ser. No. 241,655
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—74

269,911
SEALING STRIP
Robert W. Lucous, 1690 S. Shiloh Rd., Laura, Ohio 45337
Filed Sep. 14, 1981, Ser. No. 301,827
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—74

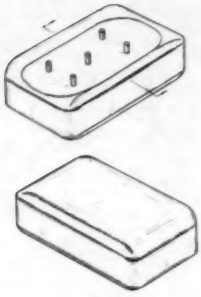


269,912
POST FOR AN ELECTRIC FENCE
Yrjö Aho, Espoo, Finland, assignor to Exel Oy, Helsinki, Finland
Filed Sep. 3, 1981, Ser. No. 299,322
Claims priority, application Finland, Mar. 4, 1981, 160/81
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D25—77

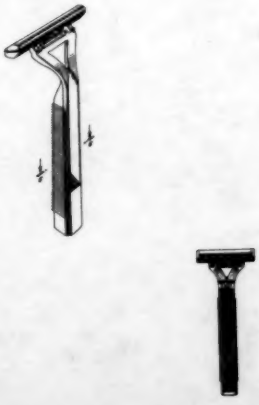
269,913
ADJUSTABLE LAMP
Robert W. Johnson, Levittown, Pa., and Donald W. Doman, Janesville, Wis., assignors to Exide Electronics Corporation, Philadelphia, Pa.
Filed Aug. 14, 1980, Ser. No. 178,035
Term of patent 4 years
Int. Cl. D26—*03*
U.S. Cl. D26—63



269,914
BAR OF SOAP
Kiyoshi Otsuka, Kato-so, 2166, Futoo-cho, Kouhoku-ku, Yokohama, Japan
Filed Sep. 23, 1981, Ser. No. 304,928
Term of patent 14 years
Int. Cl. D28—*02*
U.S. Cl. D28—8.1

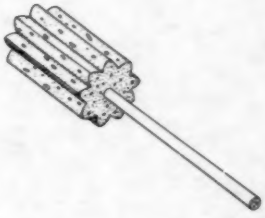


269,915
DISPOSABLE SAFETY RAZOR
Clemens A. Iten, Staunton, Va., and David O. Chase, Skaneateles, N.Y., assignors to American Safety Razor Company, Verona, Va.
Filed Apr. 8, 1981, Ser. No. 252,084
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—46

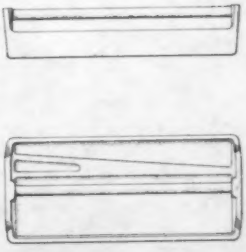


269,916
DOG HOUSES
Lawrence Lodrick, 2436 Harrison Ave. North, Rochester, Mich. 48063
Filed Apr. 16, 1981, Ser. No. 254,961
The portion of the term of this patent subsequent to Nov. 4, 1994, has been disclaimed.
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—1

269,917
HOUSHOLD CLEANING MOP
Donald C. Spann, 1003 Botany Rd., Greenville, S.C. 29607
Filed Nov. 5, 1980, Ser. No. 204,259
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D32—51



269,918
TOOL TRAY OR THE LIKE
Andrew E. Dembricks, Wake, N.C., assignor to Southern Case, Inc., Raleigh, N.C.
Filed Nov. 5, 1980, Ser. No. 204,260
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D34—44



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 26TH DAY OF JULY, 1983

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Aarts, Petrus J. J.; Fleck, Harald; Kocsisek, Karl; and Schmidt, Ernst M., to U.S. Philips Corporation. Head-drum mounting for a helical scan tape recorder. 4,395,745, Cl. 360-129.000.

AB Eiser: *See*—
Eng, Kjell, 4,395,336, Cl. 210-693.000.

AB Piab: *See*—
Tell, Peter, 4,395,202, Cl. 417-169.000.

AB Saffle Gjuteri and Mekaniska Verkstad: *See*—
Andersson, Harald, 4,395,331, Cl. 210-329.000.

Abe, Akira: *See*—
Ohno, Mitsuo; Hatazawa, Kikuo; and Abe, Akira, 4,395,721, Cl. 346-160.000.

Abe, Atsushi; Ogawa, Hisahito; and Nishikawa, Masahiro, to Matsushita Electric Industrial Co., Ltd. Method of and apparatus for manufacturing ultrafine particle film. 4,395,440, Cl. 427-180.000.

Abel, Edward P., to Eastman Kodak Company. Neutralizing-timing layer for color transfer assemblages containing lactone polymer. 4,395,477, Cl. 430-216.000.

Abrams, Halle, to Bethlehem Steel Corporation. Thermal mechanical process for steel slabs and the product thereof. 4,395,296, Cl. 148-12.400.

Aciers et Outillage Peugeot: *See*—
Schmidt, Yves, 4,394,792, Cl. 24-230.00A.

Acker, Rolf-Dieter; and Hamprecht, Gerhard, to BASF Aktiengesellschaft. Preparation of 2-aminopyridine derivatives. 4,395,555, Cl. 546-289.000.

Ackley, E. Michael. Capsule orienting apparatus. 4,394,933, Cl. 221-173.000.

Adam, Jean-Marie; and Galafassi, Pierre. Basic dioxazine compounds. 4,395,545, Cl. 544-74.000.

Adam, John D., to Westinghouse Electric Corp. Attenuation of higher order width modes in magnetostatic wave devices. 4,395,686, Cl. 333-151.000.

Adams, Daniel O.; and Beckman, Gregg S., to Pako Corporation. Apparatus for printing alphanumeric information on photographic slide mounts. 4,395,144, Cl. 400-30.000.

Adams, James Y.: *See*—
Wardman, John C.; and Adams, James Y., 4,394,814, Cl. 60-641.150.

Adria Laboratories Inc.: *See*—
Wolgemuth, Richard L., 4,395,392, Cl. 424-78.000.

Advance Lifts, Inc.: *See*—
Clarke, David E., 4,394,888, Cl. 187-1.00R.

Agfa-Gevaert AG: *See*—
Luhrig, Hermann; Hoffacker, Franz; Kovacic, Guido; Engelsmann, Dieter; Zobel, Siegfried; Hackenberg, Hubert; and Wagner, Karl, 4,395,107, Cl. 354-275.000.

Ahlstrom, Allan. Vending machine having tiltable flap closure. 4,394,932, Cl. 221-83.000.

Ahne, Hellmut; Kuhn, Eberhard; and Rubner, Roland, to Siemens Aktiengesellschaft. Method for the preparation of heat-resistant relief structures using positive resists. 4,395,482, Cl. 430-326.000.

Airey, John E.: *See*—
Shetty, Bola V.; and Airey, John E., 4,395,552, Cl. 546-118.000.

Airwick Industries, Inc.: *See*—
McLaughlin, James H.; Dente, Stephen V.; Carmello, Robert; and Smith, James A., 4,395,347, Cl. 252-139.000.

Alberghini, Alfred C.; and Nickel, Gerhard E. B., to Sewell Plastics, Inc. Method for making an injection stretch blow molded container with an integral tab. 4,395,378, Cl. 264-532.000.

Alcan International Limited: *See*—
Looser, Christian, 4,394,917, Cl. 215-232.000.

Algieri, Aldo A.; and Crenshaw, Ronnie R., to Bristol-Myers Company. Chemical compounds. 4,395,553, Cl. 546-235.000.

Allen-Bradley Company: *See*—
Zaffrann, Albert A.; Borchardt, Robert E.; and Nelson, Grant W., 4,395,606, Cl. 200-144.00R.

Allergan Pharmaceuticals, Inc.: *See*—
Kleist, Frederick D., 4,395,346, Cl. 252-135.000.

Allied Eneabba Limited: *See*—
Poynton, Corbett J., 4,395,384, Cl. 423-1.000.

Allis-Chalmers Corporation: *See*—
Schucker, Thomas R., 4,395,198, Cl. 415-219.00R.

Almar Products Corporation: *See*—
Davis, Denny G.; Emerson, Robert C.; and Banks, George J., Jr., 4,395,029, Cl. 269-57.000.

Alps Electric Co., Ltd.: *See*—
Kondo, Shiro; and Takii, Yasuo, 4,395,611, Cl. 200-314.000.
Tominaga, Shinobu, 4,395,604, Cl. 200-74.000.

Althouse, Victor E. Semiconductor wafer and die handling method and means. 4,395,451, Cl. 428-141.000.

Amaya, Nestor R.: *See*—
Kopse, Odon; and Amaya, Nestor R., 4,394,823, Cl. 73-119.00A.

Amdahl Corporation: *See*—
Chiang, Ping-Wang, 4,395,438, Cl. 427-94.000.

American Cyanamid Company: *See*—
Henderson, William A., Jr.; and Singh, Balwant, 4,395,369, Cl. 260-453.00P.
Maulding, Donald R., 4,395,577, Cl. 568-936.000.
Raghu, Sivaraman; Farina, James S.; and Peake, Steven L., 4,395,547, Cl. 544-184.000.

American Hoechst Corporation: *See*—
Covill, James H.; Kelly, Michael G.; and Leahy, Thomas F., 4,395,566, Cl. 560-87.000.

American Safety Equipment Corporation: *See*—
Stamboulian, Nazareth; and Neumann, Fred F., 4,394,993, Cl. 242-107.40A.

Amiaut, Jean. Gun for applying paints by hot process. 4,394,967, Cl. 239-133.000.

Ammco Tools, Inc.: *See*—
Spainhour, Phillip A., 4,395,020, Cl. 254-10.500.

AMP Incorporated: *See*—
Goss, Ralph R., 4,394,795, Cl. 29-739.000.

Analog Devices, Incorporated: *See*—
Morong, William H., III, 4,395,647, Cl. 307-540.000.

Anderson Bros. Mfg. Co.: *See*—
Brown, Jonathan G., 4,394,876, Cl. 141-137.000.

Anderson, Joseph R.: *See*—
Fischer, Harry A.; Koepnick, Paul J.; Dennis, Thomas A.; and Anderson, Joseph R., 4,395,427, Cl. 426-231.000.

Andersson, Harald, to AB Saffle Gjuteri and Mekaniska Verkstad. Apparatus for pressing liquid out of material containing liquid. 4,395,331, Cl. 210-329.000.

Andrews, James S.; and Hierath, Leonard L., to Magrath Company, The. Electric stock prod. 4,394,956, Cl. 231-2.00E.

Andronova, Tatyana M.: *See*—
Ovchinnikov, Jury A.; Ivanov, Vadim T.; Rostovtseva, Larisa I.; Andronova, Tatyana M.; Sorokina, Irina B.; and Malkova, Veronika P., 4,395,399, Cl. 424-177.000.

Anetsberger Brothers, Inc.: *See*—
Anetsberger, Richard J.; and Anetsberger, John A., 4,395,216, Cl. 425-290.000.

Anetsberger, John A.: *See*—
Anetsberger, Richard J.; and Anetsberger, John A., 4,395,216, Cl. 425-290.000.

Anetsberger, Richard J.; and Anetsberger, John A., to Anetsberger Brothers, Inc. Dough perforator. 4,395,216, Cl. 425-290.000.

Angenieux-Clb S.A.: *See*—
Lauzier, Rene, 4,395,603, Cl. 200-61.870.

Anger, Hal O.; Martin, Donn C.; and Lampton, Michael L., to University of California, Regents of the. Radiation imaging apparatus. 4,395,636, Cl. 250-366.000.

Anheuser-Busch, Incorporated: *See*—
Katz, Edward; Davis, Henry S.; and Scallet, Barrett L., 4,395,292, Cl. 127-29.000.

Anic S.p.A.: *See*—
Romano, Ugo; Fornasari, Giancarlo; and Di Giacchino, Sandro, 4,395,565, Cl. 560-24.000.

Antenna, Incorporated: *See*—
Nelson, Thomas E.; and Consor, Herbert A., 4,395,713, Cl. 343-713.000.

Anthony, David S.; and Anthony, Michael D. Downhole oil well pump. 4,395,200, Cl. 417-131.000.

Anthony, Michael D.: *See*—
Anthony, David S.; and Anthony, Michael D., 4,395,200, Cl. 417-131.000.

Anzawa, Norio: *See*—
Terakado, Ryoji; Iwasa, Masaru; Takahashi, Itsuo; Anzawa, Norio; and Yoshida, Gen, 4,395,021, Cl. 266-85.000.

Aoike, Nanjou; Inui, Kenichi; and Koshimura, Yasunobu, to Toshiba Electric Equipment Corporation. Power supply device. 4,395,659, Cl. 315-209.00R.

Aoyagi, Takaaki: *See*—
Umezawa, Hamao; Takeuchi, Tomio; Aoyagi, Takaaki; Hachisu, Mitsugu; Kawamura, Kenji; Fukatsu, Shunzo; and Sekizawa, Yasuharu, 4,395,402, Cl. 424-177.000.

Aoyagi, Yukio: *See*—
Izumi, Eiki; Watanabe, Hiroshi; Aoyagi, Yukio; Honma, Kazuo; and Nakajima, Kichio, 4,395,199, Cl. 417-53.000.

Applefield, Jerome: *See*—
Rech, Jakob, 4,394,944, Cl. 222-553.000.

Applefield, Sheldon: *See*—
Rech, Jakob, 4,394,944, Cl. 222-553.000.

Arai, Kiyoshi, to Sony Corporation. Method and apparatus for operating a thermal printer with uniform heat distribution. 4,395,146, Cl. 400-121.000.

Arbed S.A.: *See*—
Hodl, Fritz; and Kassegger, Friedrich, 4,395,026, Cl. 266-265.000.

Arendt, Dan R.: *See*—
Kronich, Peter G.; and Arendt, Dan R., 4,394,893, Cl. 192-1.000.

Argus Verwaltungsgesellschaft mbH: *See*—
Walter, Friedrich C., 4,394,874, Cl. 137-614.020.

Arikawa, Tetsuro; and Samatsu, Yasuo, to Nippon Air Brake Co., Ltd. Brake fluid pressure control apparatus in skid control system. 4,395,073, Cl. 303-116.000.

Armour and Company: *See*—
Theiler, Richard F., 4,395,428, Cl. 426-266.000.

Armstrong, Donald J.: *See*—
Smith, Richard H.; and Armstrong, Donald J., 4,394,856, Cl. 123-506.000.

Arthur D. Little, Inc.: *See*—
McCullough, John E., 4,395,205, Cl. 418-55.000.

Arthur G. Russell Company, Incorporated, The: *See*—
Buchas, Gerald L., 4,395,665, Cl. 318-114.000.

Artos Engineering Company: *See*—
Stoehr, Herbert M., 4,394,829, Cl. 83-314.000.

Asada, Masahiro: *See*—
Yonezawa, Kazuya; Asada, Masahiro; and Matsuura, Miyuki, 4,395,537, Cl. 528-219.000.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See*—
Itoh, Takayuki, 4,395,092, Cl. 350-427.000.
Kawasaki, Masahiro; Okura, Zenichi; and Urano, Fumio, 4,395,106, Cl. 354-271.000.

Asai, Toshio: *See*—
Nakazawa, Tetsuji; and Asai, Toshio, 4,395,739, Cl. 360-61.000.

Asakura, Yamato; Suzuki, Teiji; and Kawamura, Fumio, to Hitachi, Ltd. Apparatus for isotope exchange reaction. 4,395,386, Cl. 423-249.000.

Asano, Masamichi: *See*—
Iwahashi, Hiroshi; and Asano, Masamichi, 4,395,724, Cl. 357-23.0VT.

Asea AB: *See*—
Grimfjard, Goran, 4,395,281, Cl. 75-53.000.

Ashworth Bros., Inc.: *See*—
Roinestad, Gerald C., 4,394,901, Cl. 198-850.000.

Association Gradient: *See*—
Berna, Michel; Kant, Michel; Vilain, Jean P.; and Seger, Rene, 4,395,669, Cl. 318-502.000.

Atlantic Richfield Company: *See*—
Barker, Thomas H.; and Roach, Thomas L., 4,395,626, Cl. 235-381.000.
Barker, Thomas H.; Roach, Thomas L.; Kruse, Richard H.; Fayer, Jay A.; and Bohlman, Eric O., 4,395,627, Cl. 235-381.000.

Auboir, Pierre; Bonnefond, Pierre; and Mank, Larry, to Institut Francais du Petrole. Process for solvent deasphalting of residual hydrocarbon oils. 4,395,330, Cl. 208-309.000.

Automatic Material Handling, Inc.: *See*—
Keller, Alex J.; and Pinto, Akiva, 4,394,790, Cl. 19-105.000.

Averill, Robert D., to United States of America, National Aeronautics and Space Administration. Vibration isolation and pressure compensation apparatus for sensitive instrumentation. 4,394,819, Cl. 62-514.00R.

Avery, Gilbert H., to Barber-Colman Company. Reset controller with improved input mechanism. 4,394,869, Cl. 137-82.000.

Avgerinos, George C.: *See*—
Wang, Daniel I. C.; and Avgerinos, George C., 4,395,543, Cl. 536-56.000.

Avison, Gerald; and Blenkinsop, Philip T., to Spiralux Limited. Daisy wheel printer. 4,395,147, Cl. 400-144.200.

AWB Apparatenfabriek Warmtebouw B.V.: *See*—
Siebelt, Dirk B. L., 4,394,848, Cl. 122-13.00R.

Axmann, Otto. Swimsuit. 4,394,781, Cl. 2-67.000.

B & H Manufacturing Company, Inc.: *See*—
Hoffmann, Wolfgang, 4,395,300, Cl. 156-294.000.

Backe, Wolfgang; Goedecke, Wolf-Dieter; and Schwenzer, Reinhard, to Friedrich Grohe Armaturenfabrik GmbH & Co. Pulsating shower using a swirl chamber. 4,394,965, Cl. 239-102.000.

Baer, Ralph H., to Sanders Associates, Inc. Television precision target shooting apparatus and method. 4,395,045, Cl. 273-312.000.

Bahr, Dietrich J.; and Goldrian, Gottfried A., to International Business Machines Corporation. Method and arrangement for controlling the print current in metal paper printers. 4,395,715, Cl. 346-1.100.

Bailey, Richard G.: *See*—
Reilly, Charles; and Bailey, Richard G., 4,395,265, Cl. 44-15.00R.

Baker, Donald E.: *See*—
Garbis, Dennis J.; and Baker, Donald E., 4,394,828, Cl. 81-9.510.

Bakken, Gordon J.; Randall, Alfred R.; and Bodily, Richard W., to Thiokol Corporation. Annular, flexible bearings for radial loads. 4,395,143, Cl. 384-221.000.

Bakx, Martinus C. M., to Mead Corporation, The. Wrap-around type package for bottles. 4,394,903, Cl. 206-427.000.

Balakirev, Anatoly A.; and Balakirev, Boris A., to Kazakhsky Khimiko-Tekhnologichesky Institut. Process for producing concrete. 4,395,289, Cl. 106-98.000.

Balakirev, Boris A.: *See*—
Balakirev, Anatoly A.; and Balakirev, Boris A., 4,395,289, Cl. 106-98.000.

Balda-Werke Photographische Gerate und Kunststoff GmbH & Co., KG: *See*—
Lange, Karl-Heinz, 4,395,104, Cl. 354-230.000.

Baldwin, A. Frank, to Burlington Industries, Inc. Absorbent microbiocidal fabric and product. 4,395,454, Cl. 428-290.000.

Baldwin-Gegenheimer Corporation: *See*—
MacPhee, John; Wirth, David; and St. John, John, 4,394,870, Cl. 137-99.000.

Ballany, John M.; and Galbraith, Andrew R., to Janssen Pharmaceutica N.V. Novel parasiticidal pour-on compositions. 4,395,407, Cl. 424-200.000.

Bankowsky, Heinz-Hilmar: *See*—
Nieberle, Juergen; Peters, Karl-Clemens; Reuther, Wolfgang; and Bankowsky, Heinz-Hilmar, 4,395,535, Cl. 528-137.000.

Banks, George J., Jr.: *See*—
Davis, Denny G.; Emerson, Robert C.; and Banks, George J., Jr., 4,395,029, Cl. 269-57.000.

Barber-Colman Company: *See*—
Avery, Gilbert H., 4,394,869, Cl. 137-82.000.

Barchard, John, to Spyder Sales & Service, Inc. Power operated extensions for forks of a fork lift truck. 4,395,190, Cl. 414-664.000.

Bare, Buddy L.: *See*—
Bare, Clyde A., Jr.; Bare, Buddy L.; and Hill, Walter A., 4,394,975, Cl. 239-654.000.

Bare, Clyde A., Jr.; Bare, Buddy L.; and Hill, Walter A. Rock dust blower. 4,394,975, Cl. 239-654.000.

Barker, Thomas H.; and Roach, Thomas L., to Atlantic Richfield Company. Gasoline station system for enablement of selected pumps by a credit card console located at the pump island. 4,395,626, Cl. 235-381.000.

Barker, Thomas H.; Roach, Thomas L.; Kruse, Richard H.; Fayer, Jay A.; and Bohlman, Eric O., to Atlantic Richfield Company. Gasoline station system for enablement of selected pumps by a credit card console located at the pump island. 4,395,627, Cl. 235-381.000.

Barlow, Robert C., to O. A. Newton & Son Company. Apparatus for agitating, conveying and weighing particulate material. 4,395,131, Cl. 366-141.000.

Barnes, Richard D.: *See*—
Valiulis, Stanley J.; and Barnes, Richard D., 4,394,909, Cl. 211-59.100.

Barr, James L.; and Johnson, Donald R., to Barr Mold & Die, Inc. Universal electrode holder. 4,395,613, Cl. 219-69.00E.

Barr Mold & Die, Inc.: *See*—
Barr, James L.; and Johnson, Donald R., 4,395,613, Cl. 219-69.00E.

Barre, Michel: *See*—
Bellot, Dominique; and Barre, Michel, 4,395,064, Cl. 292-201.000.

Barrett, Lawrence R.; and Weiner, Allan J., to Du Pont de Nemours, E. I., and Company. Misalignment system for a microtome. 4,395,075, Cl. 308-2.00R.

Bartl, Herbert: *See*—
Waniczek, Helmut; Suling, Carlhans; Lindner, Christian; and Bartl, Herbert, 4,395,517, Cl. 525-168.000.

Bartner, Elliot, to Survival Technology, Inc. Automatic injector with cartridge having separate sequentially injectable medicaments. 4,394,863, Cl. 604-90.000.

Bartolotti, Frank; and Dockstader, Douglas. Reflective highway marker. 4,395,155, Cl. 404-9.000.

BASF Aktiengesellschaft: *See*—
Acker, Rolf-Dieter; and Hamprecht, Gerhard, 4,395,555, Cl. 546-289.000.
Hagen, Helmut; Ziegler, Hans; Mappes, Celia J.; and Pommer, Ernst-Heinrich, 4,395,415, Cl. 424-263.000.
Leutner, Bernd; Purucker, Berndhard; Rother, Eberhard; Juergens, Geerd F.; and Wagner, Dieter, 4,395,273, Cl. 71-11.000.
Naarmann, Herbert; Naegele, Dieter; Penzien, Klaus; and Schlag, Johannes, 4,395,497, Cl. 523-135.000.
Nieberle, Juergen; Peters, Karl-Clemens; Reuther, Wolfgang; and Bankowsky, Heinz-Hilmar, 4,395,535, Cl. 528-137.000.

BASF Wyandotte Corporation: *See*—
Fenwick, George W., 4,395,264, Cl. 8-662.000.
Schmidt, Douglass N.; and Fischetti, Frank, Jr., 4,395,422, Cl. 424-284.000.
Schmolka, Irving R., 4,395,393, Cl. 424-78.000.

Battista, William P.: *See*—
Yuen, Aubrey; and Battista, William P., 4,395,740, Cl. 360-72.200.

Bauer, Franz: *See*—
Langenegger, Georg; Bauer, Franz; and Langenegger, Josef, 4,394,847, Cl. 119-75.000.

Bauer, Gerald L.: *See*—
Chowdhury, Ajit K.; Bauer, Gerald L.; and Lehmann, Richard W., 4,395,339, Cl. 210-761.000.

Bauer, Herbert; Piestert, Gerhard; and Gilch, Heinz G., to USM Corporation. Adhesive compositions and method. 4,395,301, Cl. 156-307.500.

Bauer, Wilfried; and Pless, Janos, to Sandoz Ltd. Novel polypeptides, processes for their production, pharmaceutical compositions comprising said polypeptides and their use. 4,395,403, Cl. 424-177.000.

Baum, Kurt; Grakauskas, Vytautas; and Berkowitz, Phillip T., to United States of America, Navy. Synthesis of 3-hydroxyoxetane. 4,395,561, Cl. 549-510.000.

Bausch & Lomb Incorporated: *See*—
Mohrman, Richard C., 4,395,097, Cl. 351-201.000.

Baxter Travenol Laboratories, Inc.: *See*—
Shim, Norm, 4,394,862, Cl. 604-67.000.

Bayer Aktiengesellschaft: *See*—
Oeckl, Siegfried; Zahl, Gero; and Radt, Walter, 4,395,371, Cl. 260-464.000.
Paulus, Wilfried; and Genth, Hermann, 4,395,274, Cl. 71-67.000.
Waniczek, Helmut; Suling, Carlhans; Lindner, Christian; and Bartl, Herbert, 4,395,517, Cl. 525-168.000.

Bazarov, Vladimir G.; Kuzmin, Alexei V.; Smaga, Gennady A.; Kapchits, Zelik F.; Demnikov, Sergei J.; and Soosalu, Peter I. Rotary burner for liquid fuels. 4,395,228, Cl. 431-168.000.

Beall, George H.; Mansfield, Gerald R.; and Schreurs, Jan W. H., to Corning Glass Works. Method for making porous magnetic glass and crystal-containing structures. 4,395,271, Cl. 65-31.000.

Becchi, Raffaele: *See*—
Giacone, Felice; Becchi, Raffaele; and Ukmar, Boris, 4,395,145, Cl. 400-59.000.

Becker, Edward B., to United States of America, Navy. Four pivot linkage to simulate head/neck kinematics. 4,395,235, Cl. 434-270.000.

Becker, Roger T.; Hathaway, John W.; and Harbour, J. Michael, to Kalamazoo Conveyor Company. Central system elevator. 4,394,900, Cl. 198-614.000.

Becker, William A. Time-variable control for lamp intensity. 4,395,661, Cl. 315-360.000.

Beckman, Gregg S.: *See*—
Adams, Daniel O.; and Beckman, Gregg S., 4,395,144, Cl. 400-30.000.

Bee Brand Medico Dental Co., Ltd.: *See*—
Yamamoto, Hiroji, 4,395,398, Cl. 424-145.000.

Beers, Melvin D.: *See*—
White, Mary A.; Beers, Melvin D.; Lucas, Gary M.; Smith, Robert A.; and Swiger, Roger T., 4,395,526, Cl. 528-18.000.

Beissbarth, Osmond. Wheel alignment measuring apparatus. 4,394,798, Cl. 33-335.000.

Belart, Juan, to ITT Industries, Inc. Vehicular hydraulic brake system. 4,395,072, Cl. 303-114.000.

Bell Telephone Laboratories, Incorporated: *See*—
Damen, Theodoor C.; and Duguay, Michel A., 4,395,769, Cl. 372-7.000.
Flanagan, James L., 4,395,593, Cl. 179-1.00F.
Hamamsy, Mahmoud A. E., 4,395,637, Cl. 250-551.000.
Hobbins, Norris D.; and Roberts, Ronald F., 4,395,294, Cl. 148-6.14R.
Meyerle, John A., 4,395,594, Cl. 179-2.0EB.
Moffitt, Bryan S.; and Ross, Alexander R., 4,395,765, Cl. 365-174.000.
Seidel, Harold, 4,395,599, Cl. 179-170.0NC.
Silfvast, William T.; Szeto, Leo H.; and Wood, Obert R., II, 4,395,770, Cl. 372-62.000.
Toumani, Rouben, 4,395,675, Cl. 323-271.000.
Trested, Warren C., Jr., 4,395,772, Cl. 375-40.000.

Bellot, Dominique; and Barre, Michel, to Regie Nationale des Usines Renault. Electric automobile trunk lock mechanism. 4,395,064, Cl. 292-201.000.

Belohoubek, Erwin F., to RCA Corporation. Adjustable phase shifter. 4,395,687, Cl. 333-164.000.

Beloit Corporation: *See*—
Fitzpatrick, Donald C.; Guild, Gerald A.; and Karis, Arthur T., 4,395,038, Cl. 271-195.000.

Belorussky Nauchnoissledovatelsky Institut Kardiologii: *See*—
Sidorenko, Georgy I.; Stankevich, Vladimar I.; Katsygin, Vitaly V.; and Lopato, Georgy P., 4,394,865, Cl. 128-782.000.

Belsky, Igal: *See*—
Gutnick, David L.; Rosenberg, Eugene; Belsky, Igal; and Zinaida, Zosim, 4,395,353, Cl. 252-356.000.
Gutnick, David L.; Rosenberg, Eugene; Belsky, Igal; and Zinaida, Zosim, 4,395,354, Cl. 252-356.000.

Beltrop, Herbert; Teutenberg, Josef; and Hilbig, Manfred, to Krupp Polysius AG. Pneumatic tube installation for posting samples of material. 4,395,164, Cl. 406-74.000.

Benadi', Alberto, to Lavorzaione Materie Plastiche L.M.P. S.p.A. Adaptor for extruding a plurality of streams of synthetic thermoplastic foam simultaneously from a single extruder. 4,395,217, Cl. 425-382.00R.

Bendix Corporation, The: *See*—
Frear, David L., 4,395,083, Cl. 339-59.00R.
Marsh, Edward K., 4,395,086, Cl. 339-176.00M.
Taig, Alistair G.; and Jordan, David D., 4,395,246, Cl. 464-153.000.

Benham, Judith L., to Minnesota Mining and Manufacturing Company. High temperature phenolic resins and friction elements prepared therefrom. 4,395,498, Cl. 523-158.000.

Berger, Ade, to M & T Chemicals Inc. Siloxane-containing polymers. 4,395,527, Cl. 528-26.000.

Berggren, Soren: *See*—
Wirholm, Stig; and Berggren, Soren, 4,395,183, Cl. 414-416.000.

Bergman, Carl A.; Thomas, Roy L.; and Bourbeau, Richard A., to Standard Duplicating Machines Corporation. Sheet feeder with stack-holding tray having flexible-band-coupled guide elements. 4,395,036, Cl. 271-171.000.

Berke, Robert L.: *See*—
Login, Robert B.; and Berke, Robert L., 4,395,373, Cl. 260-928.000.

Berkowitz, Phillip T.: *See*—
Baum, Kurt; Grakauskas, Vytautas; and Berkowitz, Phillip T., 4,395,561, Cl. 549-510.000.

Berna, Michel; Kant, Michel; Vilain, Jean P.; and Seger, Rene, to Association Gradient. Electrical machine having controlled characteristics and its application to a wind-driven machine. 4,395,669, Cl. 318-502.000.

Bernstein, Joel E. Method and composition for treating pruritis. 4,395,420, Cl. 424-278.000.

Berry, Max A., to Ghafoori, Abdul R. Ignition carry-over in multiple burner heating apparatus. 4,395,230, Cl. 431-286.000.

Bertram, James L.; and Woo, Edmund P., to Dow Chemical Co., The. Polyurethanes prepared from hydroxy benzamides or polyols prepared from hydroxy benzamides and polyisocyantes or polyisothiocyanates. 4,395,533, Cl. 528-77.000.

Bertram, James L.: *See*—
Doorakian, George A.; and Bertram, James L., 4,395,574, Cl. 568-11.000.

Berzins, Andrejs, to Davy Inc. Apparatus and method for charging material into a receptacle. 4,395,179, Cl. 414-161.000.

Besser Company: *See*—
Springs, Thomas W.; and Wallis, William F., 4,395,213, Cl. 425-211.000.

Best Lock Corporation: *See*—
Best, Walter E.; and Foshee, William R., 4,394,821, Cl. 70-422.000.

Best, Walter E.; and Foshee, William R., to Best Lock Corporation. Door lock mechanism. 4,394,821, Cl. 70-422.000.

Bethlehem Steel Corporation: *See*—
Abrams, Halle, 4,395,296, Cl. 148-12.400.
Wilson, Edwin B.; Eben, C. Frederick; Meyer, Charles L.; and Schaeffer, Charles W., 4,395,161, Cl. 405-259.000.

Bianchi, Giuseppe; Nidola, Antonio; and Martelli, Gian N., to Oronzio de Nora Impianti Elettrochimici S.p.A. Process for preparing electrochemical material. 4,395,436, Cl. 427-53.100.

Bianco, Eric L. Selfinterlocking dead bolt assembly. 4,395,063, Cl. 292-150.000.

Bienvenu, Jacques; Carre, Claude; Luu, Duc; and Verdier, Henri, to Compagnie Honeywell Bull. Process synchronization utilizing semaphores. 4,395,757, Cl. 364-200.000.

Bildstein, Hubert: *See*—
Sonnweber, Alfred; Bildstein, Hubert; and Egger, Lambert, 4,394,953, Cl. 228-124.000.

Billon, Alain: *See*—
Le Page, Jean-Francois; Billon, Alain; and Jacquin, Yves, 4,395,329, Cl. 208-251.00H.

Birkle, Siegfried; Rubner, Roland; Hauschildt, Hans; and Rissel, Eva-Maria, to Siemens Aktiengesellschaft. Method for the manufacture of resist structures. 4,395,481, Cl. 430-326.000.

Bishop, Delmar J., to Procter & Gamble Company, The. Film forming structure for uniformly debossing and selectively aperturing a resilient plastic web and method for its construction. 4,395,215, Cl. 425-290.000.

Bitsch, Roland: *See*—
Bodart, Detlef; and Bitsch, Roland, 4,395,494, Cl. 436-111.000.

Blackwell, Jennings P.; Tieszen, Dale O.; and Scruggs, Jack G., to Phillips Petroleum Company. Poly(arylene sulfide) composition suitable for molding. 4,395,509, Cl. 524-127.000.

Blanc, Claude: *See*—
Desgrandchamps, Guy; Kvasnikoff, Georges; and Blanc, Claude, 4,395,390, Cl. 423-573.00G.

Blanchard, Clarence E., to Ourboard Marine Corporation. Marine propulsion lower unit with ball clutch mechanism. 4,395,240, Cl. 440-86.000.

Blankenship, Michael G.; and Keck, Donald B., to Corning Glass Works. Method of fabricating a polarization retaining single-mode optical waveguide. 4,395,270, Cl. 65-3.120.

Blenkinsop, Philip T.: *See*—
Avison, Gerald; and Blenkinsop, Philip T., 4,395,147, Cl. 400-144.200.

Bodart, Detlef; and Bitsch, Roland, to Merck Patent Gesellschaft mit Beschrankter Haftung. Reagent and method for the determination of hydrazine. 4,395,494, Cl. 436-111.000.

Boden, Richard M.; Tyszkiewicz, Theodore J.; and Licciardello, Michael, to International Flavors & Fragrances Inc. Branched chain alkenyl methyl carbonates, uses thereof in augmenting or enhancing the aroma of perfume compositions, colognes and perfumed articles and formate intermediates useful in preparing same. 4,395,370, Cl. 260-463.000.

Boden, Richard M., to International Flavors & Fragrances Inc. Use of Prins reaction products of diisoamylene derivatives to augment or enhance the aroma or taste of foodstuffs. 4,395,425, Cl. 426-3.000.

Bodily, Richard W.: *See*—
Bakken, Gordon J.; Randall, Alfred R.; and Bodily, Richard W., 4,395,143, Cl. 384-221.000.

Boehm, Peter: *See*—
Weiler, Rolf; and Boehm, Peter, 4,394,832, Cl. 91-376.00R.

Boehringer Mannheim GmbH: *See*—
Stahl, Peter; Seidel, Hans; and Brunner, Herwig, 4,395,489, Cl. 435-190.000.

Boeing Company, The: *See*—
Bormke, Odo S., 4,395,009, Cl. 248-68.0CB.
Czajka, Dennis C.; and Nordstrand, David P., 4,394,871, Cl. 137-115.000.
Deviny, James E.; and Puncoch, Miloslav, 4,395,000, Cl. 244-118.300.
Hoener, Dieter W.; Lambert, Neville L.; and Schweizer, Erwin V., 4,395,172, Cl. 410-84.000.
MacDonell, Wayne O.; Graves, Donald L.; and Timar, Thomas, 4,395,178, Cl. 414-138.000.
Simmons, Gerald C.; and Hilby, Noel E., 4,395,068, Cl. 294-78.00R.
Whitener, Philip C., 4,395,450, Cl. 428-116.000.

Bohlman, Eric O.: *See*—
Barker, Thomas H.; Roach, Thomas L.; Kruse, Richard H.; Fayer, Jay A.; and Bohlman, Eric O., 4,395,627, Cl. 235-381.000.

Bohme, Rolf C.; and Lazerson, Max M., to General Mining Union Corporation, Limited. Displacement error correction in sorting systems. 4,394,907, Cl. 209-556.000.

Bohme, Rolf C., to General Mining Union Corporation Limited. Radiometric methods and means. 4,395,634, Cl. 250-359.100.

Bohner, Beat; and Rempfler, Hermann, to Ciba-Geigy Corporation. [4-(5'-Trifluoromethylpyridyl-2'-oxy)-phenoxy]-propionic acid esters with α-hydroxy or α-mercapto gamma-butyrolactone and their use as herbicides. 4,395,277, Cl. 71-94.000.

Boller, Arthur; Germann, Alfred; Schadt, Martin; and Villiger, Alois, to Hoffmann-La Roche Inc. Liquid crystal mixtures. 4,395,350, Cl. 252-299.100.

Bondarenko, Oleg P.: *See*—
Medovar, Boris I.; Gladky, Evgeny D.; Bondarenko, Oleg P.; Chekotilo, Leonty V.; Zayats, Valery I.; Egorov, Sergei P.; and Skosnyagin, Jury A., 4,395,771, Cl. 373-49.000.

Bone, Keith A. Special electric convenience outlet (SECO). 4,395,640, Cl. 307-115.000.

Bonnefond, Pierre: *See*—
Auboir, Pierre; Bonnefond, Pierre; and Mank, Larry, 4,395,330, Cl. 208-309.000.

Borchardt, Robert E.: *See*—
Zaffrann, Albert A.; Borchardt, Robert E.; and Nelson, Grant W., 4,395,606, Cl. 200-144.00R.

Borg-Warner Corporation: *See*—
Kern, John M., 4,395,248, Cl. 474-24.000.

Borg-Warner Limited: *See*—
King, Alan G., 4,395,250, Cl. 474-111.000.
King, Alan G.; and Hunt, Keith, 4,395,251, Cl. 474-111.000.

Bormke, Odo S., to Boeing Company, The. Raceway clamp. 4,395,009, Cl. 248-68.0CB.

Bossert, Emily C.: *See*—
Leiner, Howard H.; and Bossert, Emily C., 4,395,528, Cl. 528-45.000.

Boswell, James W. Game apparatus. 4,395,042, Cl. 273-176.00B.

Botzler, Ludwig, to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung. Redundant or emergency steering mechanism especially for an aircraft. 4,394,999, Cl. 244-78.000.

Bourbeau, Richard A.: *See*—
Bergman, Carl A.; Thomas, Roy L.; and Bourbeau, Richard A., 4,395,036, Cl. 271-171.000.

Bowes, Quentin: *See*—
Haase, Jeroslav; Liechti, Peter; Wegmuller, Hans; Wurster, Rudolf F.; and Bowes, Quentin, 4,395,546, Cl. 544-168.000.

Bradbury, John A. A.: *See*—
Jackson, Graham V.; Goulding, Terence; and Bradbury, John A. A., 4,395,456, Cl. 428-304.400.

Braden, Denver, to Palomar Systems & Machines, Inc. Means and method for processing miniature electronic components such as capacitors or resistors. 4,395,184, Cl. 414-417.000.

Brandt, Bertil, to Socared S.A. Wear and abrasion resistant wall structure, particularly for mills for grinding a charge comprising magnetic material. 4,394,979, Cl. 241-26.000.

Brandt, Gerald B.: *See*—
Gottlieb, Milton; and Brandt, Gerald B., 4,395,702, Cl. 340-347.0AD.

Branecky, George N.; Roetter, Frank T.; and Oeschger, Frank A., to Pitney Bowes Inc. Web folding apparatus. 4,395,255, Cl. 493-439.000.

Braun, Albert; Portz, Willi; Strauss, Georg; and Delhey, Hans-Martin, to Hoechst Aktiengesellschaft. Desulfurization mixture and process for making it. 4,395,282, Cl. 75-58.000.

Brautigan, Richard A., to Dover Corporation. Butterfly valve sealing means having an improved O-ring groove. 4,395,017, Cl. 251-306.000.

Breining, Tibor: *See*—
Hermecz, Istvan; Kokosi, Jozsef; Horvath, Agnes; Meszaros, Zoltan; Szasz, Gyorgy; Breining, Tibor; and Vasvari nee Debreczy, Lelle, 4,395,549, Cl. 544-252.000.

Brems, John H. Pallet registry mechanism and transfer lift system. 4,394,897, Cl. 198-345.000.

Bretthauer, Karlheinz: *See*—
Thome, Ludwig; Wanner, Karl; and Bretthauer, Karlheinz, 4,395,649, Cl. 310-15.000.

Briggs, George J.; and Wei, Yung-Kang, to Polysar Limited. Polymer-carbon black mixing. 4,395,501, Cl. 523-351.000.

Bring, Karl-Birger, to SAB NIFE Aktiebolag. Uninterruptible power supply with battery back-up. 4,395,639, Cl. 307-66.000.

Briscoe, Edward L., to Dailey Oil Tools, Inc. Well jar. 4,394,883, Cl. 175-304.000.

Bristol-Myers Company: *See*—
Algieri, Aldo A.; and Crenshaw, Ronnie R., 4,395,553, Cl. 546-235.000.

Bristol, Robert G.: *See*—
Sandler, Louis M.; and Bristol, Robert G., 4,395,671, Cl. 318-786.000.

British Aerospace Public Limited Company: *See*—
Sharrock, Barry; and Halliday, David P., 4,395,008, Cl. 244-215.000.

Broadway Companies, Inc., The: *See*—
Gaiser, William R.; and Gaiser, John W., 4,395,222, Cl. 425-548.000.

Brode, George L.: *See*—
Chow, Sui-Wu; and Brode, George L., 4,395,520, Cl. 525-502.000.
Chow, Sui-Wu; and Brode, George L., 4,395,521, Cl. 525-502.000.

Broeksema, Egbert; and Smeets, Arnoldus A., to U.S. Philips Corporation. Method and device for manufacturing a plastic record carrier. 4,395,211, Cl. 425-174.400.

Bron, Dan. Injector pump. 4,395,201, Cl. 417-169.000.

Brooks, Jerry A. Method and apparatus for entrenching an enlongated under-water structure. 4,395,158, Cl. 405-161.000.

Brooks, Rodney A.: *See*—
Friauf, Walter S.; Brooks, Rodney A.; Sank, Victor J.; and Cascio, Horace E., 4,395,635, Cl. 250-366.000.

Brown, Jonathan G., to Anderson Bros. Mfg. Co. Container filling machine. 4,394,876, Cl. 141-137.000.

Brownfield, Jerry A.; Sandberg, Richard J.; Niemi, Thomas J.; and Howland, Leland L., to Thermo King Corporation. Transport refrigeration unit with removable power pack frame. 4,394,818, Cl. 62-239.000.

Brunner, Herwig: *See*—
Stahl, Peter; Seidel, Hans; and Brunner, Herwig, 4,395,489, Cl. 435-190.000.

Bruson, Herman A., deceased; and by Bruson, Virginia H., executrix. Coating composition. 4,395,532, Cl. 528-75.000.

Bruson, Virginia H., executrix: *See*—
Bruson, Herman A., deceased; and Bruson, Virginia H., executrix, 4,395,532, Cl. 528-75.000.

BS & B Safety Systems, Inc.: *See*—
Ou, Sam A.; and LaPelle, Ronald J., 4,394,926, Cl. 220-89.00A.

Buchan, William R.; and Cielakie, Eddie W., to Nashua Corporation. Methods and apparatus for cleaning photoconductive members. 4,395,113, Cl. 355-15.000.

Buchas, Gerald L., to Arthur G. Russell Company, Incorporated, The. Control system for vibrating a member at its resonant frequency. 4,395,665, Cl. 318-114.000.

Bucher, Bernard P.: *See*—
Langlois, Michel; Bucher, Bernard P.; Dostert, Philippe L.; Lacour, Alain P.; and Moinet, Gerard H., 4,395,416, Cl. 424-267.000.

Buckingham, Joseph T.: *See*—
Wang, Carl C. T.; Charles, Steve; and Buckingham, Joseph T., 4,395,258, Cl. 604-65.000.

Budai, Zoltan; Lay nee Konya, Aranka; Mezei, Tibor; Petocz, Lujza; Grasser, Katalin; Kosoczky, Ibolya; Szirt nee Kiszelly, Eniko; and Gorog, Peter, to Egyt Gyogyszervegyeszeti Gyar. Oxime ethers and pharmaceutical compositions containing the same. 4,395,413, Cl. 424-250.000.

Burklund, Vernon D.: *See*—
Stone, W. James; Burklund, Vernon D.; and Dillinger, Robert B., 4,395,001, Cl. 244-122.0AE.

Burlington Industries, Inc.: *See*—
Baldwin, A. Frank, 4,395,454, Cl. 428-290.000.

Byk Gulden Lomberg Chemische Fabrik Gesellschaft mit Beschrankter Haftung: *See*—
Eistetter, Klaus; Rapp, Erich; and Wolf, Horst, 4,395,414, Cl. 424-258.000.

Byrne, Brian; and DeSimone, Robert S., to Hercules Incorporated. Diketone generators. 4,395,430, Cl. 426-534.000.

C. L. Frost & Son, Inc.: *See*—
Smith, Harvey E., Sr.; and Weis, Seigfried K., 4,395,078, Cl. 308-196.000.

Cade, Phillip J., to Electronics Corporation of America. Burner control system. 4,395,224, Cl. 431-31.000.

Cade, Phillip J., to Electronics Corporation of America. Self-checking flame failure control. 4,395,638, Cl. 250-554.000.

Calundann, Gordon W., to Celanese Corporation. High performance thermally stable poly(6-oxy-2-naphthoate). 4,395,513, Cl. 524-599.000.

Cameo Curtains, Inc.: *See*—
Heimberg, Eli, 4,394,996, Cl. 242-222.000.

Camp, Ronald L. Polyether-based thickeners with additives for increased efficiency in aqueous systems. 4,395,351, Cl. 252-315.100.

Campagne, Jean-Claude; and Frappier, Guy, to Rhone-Poulenc Industries. Expandable food composition. 4,395,429, Cl. 426-271.000.

Campbell, James F., to Paper Converting Machine Company. Method and apparatus for providing balanced stacks of diapers. 4,394,898, Cl. 198-374.000.

Canon Kabushiki Kaisha: *See*—
Eida, Tsuyoshi; Yano, Yasuhiro; Haruta, Masahiro; Matsufuji, Yohji; and Ohta, Tokuya, 4,395,288, Cl. 106-22.000.
Hosono, Nagao; and Tajima, Hatsuo, 4,395,110, Cl. 355-3.0DD.
Kanbe, Junichiro; Toyono, Tsutomu; Hosono, Nagao; and Takahashi, Tohru, 4,395,476, Cl. 430-102.000.
Kishimoto, Juji; Sado, Ichiro; and Cho, Mitsuo, 4,395,704, Cl. 340-365.00S.
Kobayashi, Masatsune; Matsumoto, Seiko; Haruta, Masahiro; and Ohta, Tokuya, 4,395,287, Cl. 106-20.000.
Komori, Shigehiro; and Yamaguchi, Masaru, 4,395,118, Cl. 355-75.000.
Kondo, Hideyo; and Fujimura, Naoto, 4,395,474, Cl. 430-67.000.
Okino, Tadashi, 4,395,658, Cl. 315-134.000.
Senuma, Michio, 4,395,105, Cl. 354-246.000.
Suzuki, Akiyoshi, 4,395,117, Cl. 355-43.000.
Takahashi, Yuji; and Masaki, Hisaji, 4,395,111, Cl. 355-14.00R.
Tezuka, Nobuo, 4,395,103, Cl. 354-212.000.
Uchidoi, Masanori; and Urushihara, Kazunobu, 4,395,098, Cl. 354-23.00D.

Cargill, Incorporated: *See*—
Panandiker, K. A. Pai; and Danick, Charles, 4,395,529, Cl. 528-45.000.

Carlson, Dennis L., to Rexnord Inc. Chain coupling elastomer cover. 4,395,245, Cl. 464-49.000.

Carlton and United Breweries Limited: *See—*
Lance, David G.; and Skinner, Raymond N., 4,395,431, Cl. 426-600.000.

Carmello, Robert: *See—*
McLaughlin, James H.; Deste, Stephen V.; Carmello, Robert; and Smith, James A., 4,395,347, Cl. 252-139.000.

Carre, Claude: *See—*
Bienvenu, Jacques; Carre, Claude; Luu, Duc; and Verdier, Henri, 4,395,757, Cl. 364-200.000.

Carrier Corporation: *See—*
Voorhis, Roger J., 4,394,816, Cl. 62-205.000.

Carroll, Frank E. Sheet metal structural shape. 4,394,807, Cl. 52-332.000.

Carter, Thomas P., Jr.: *See—*
Kastelic, John R.; Charbonneau, Larry F.; and Carter, Thomas P., Jr., 4,395,307, Cl. 162-157.300.

Cascio, Horace E.: *See—*
Friauf, Walter S.; Brooks, Rodney A.; Sank, Victor J.; and Cascio, Horace E., 4,395,635, Cl. 250-366.000.

Cases, Moises; Kraft, Wayne R.; Moore, Victor S.; Stahl, William L., Jr.; and Thoma, Nandor G., to International Business Machines Corp. Logic performing cell for use in array structures. 4,395,646, Cl. 307-468.000.

Castonguay, Roger N., to General Electric Company. Isolation shield for circuit breaker compartment secondary disconnects. 4,395,602, Cl. 200-50.0AA.

Celanese Corporation: *See—*
Calundann, Gordon W., 4,395,513, Cl. 524-599.000.
Charbonneau, Larry F., 4,395,536, Cl. 528-206.000.
Edelman, Robert, 4,395,514, Cl. 524-600.000.
Kastelic, John R.; Charbonneau, Larry F.; and Carter, Thomas P., Jr., 4,395,307, Cl. 162-157.300.

Centre de Recherches Metallurgiques-Centum voor Research in de Metallurgie: *See—*
Paulus, Philippe A.; and Economopoulos, Marios, 4,395,022, Cl. 266-106.000.

Chan, John K., to Union Carbide Corporation. Process for preparing N-alkyl-nitroanilines. 4,395,572, Cl. 564-399.000.

Chan, Ka-Kong; and Pawson, Beverly A., to Hoffmann-La Roche, Inc. 5(Halophenyl)-2-fluoro-pentadienals. 4,395,575, Cl. 568-442.000.

Chang, Chin A.: *See—*
Esaki, Leo; and Chang, Chin A., 4,395,722, Cl. 357-16.000.

Chang, Clarence D.; and Perkins, Patrick D., to Mobil Oil Corporation. Process for producing alpha-picoline. 4,395,554, Cl. 546-250.000.

Chapman, James M., Jr.: *See—*
Hall, Iris; Cocolas, George; and Chapman, James M., Jr., 4,395,417, Cl. 424-270.000.

Charbonneau, Larry F., to Celanese Corporation. Preparation of aromatic copolyesters via in situ esterification with isopropenyl esters of an alkyl acid. 4,395,536, Cl. 528-206.000.

Charbonneau, Larry F.: *See—*
Kastelic, John R.; Charbonneau, Larry F.; and Carter, Thomas P., Jr., 4,395,307, Cl. 162-157.300.

Charles A. Breskin Assoc. Inc.: *See—*
Grussen, Jean, 4,394,918, Cl. 215-243.000.

Charles, Steve: *See—*
Wang, Carl C. T.; Charles, Steve; and Buckingham, Joseph T., 4,395,258, Cl. 604-65.000.

Chavee, Rene M.; and Gabriels, Andre J., to Fabrique Nationale Herstal, en abrege F.N., Societe Anonyme. Rifle-grenade with bullet pass-through device. 4,394,836, Cl. 102-485.000.

Check, Dwight E.: *See—*
Rice, Verle L.; and Check, Dwight E., 4,394,878, Cl. 144-131.000.

Chekotilo, Leonty V.: *See—*
Medovar, Boris I.; Gladky, Evgeny D.; Bondarenko, Oleg P.; Chekotilo, Leonty V.; Zayats, Valery I.; Egorov, Sergei P.; and Skosnyagin, Jury A., 4,395,771, Cl. 373-49.000.

Chemplex Company: *See—*
Kirch, William, 4,395,523, Cl. 526-64.000.

Chevron Research Company: *See—*
de Vries, Louis; and King, John M., 4,395,343, Cl. 252-32.70E.

Chiang, Ping-Wang, to Amdahl Corporation. Low pressure chemical vapor deposition of silicon nitride films. 4,395,438, Cl. 427-94.000.

Chihara, Hiroyuki, to Kabushiki Kaisha Suwa Seikosha. Electronic timepiece. 4,395,138, Cl. 368-204.000.

Ching, Ta-Yen, to General Electric Company. Method for making silicon coated polycarbonates and article obtained therefrom. 4,395,461, Cl. 428-412.000.

Chinoin Gyogyszer es Vegyeszeti Termekek Gyara Rt.: *See—*
Hermecz, Istvan; Kokosi, Jozsef; Horvath, Agnes; Meszaros, Zoltan; Szasz, Gyorgy; Breining, Tibor; and Vasvari nee Debreczy, Lelle, 4,395,549, Cl. 544-252.000.
Molnar, Attila; Csermely, Gyorgy; and Lanyi, Gyorgy, 4,395,568, Cl. 560-198.000.

Chisso Corporation: *See—*
Yohji, Terui; Isao, Koga; and Nobumasa, Ohtake, 4,395,562, Cl. 556-431.000.

Chiwaki, Kenichi: *See—*
Fujino, Teruhisa; Osawa, Fujio; Chiwaki, Kenichi; and Narazaki, Sadatoshi, 4,395,779, Cl. 455-306.000.

Chloride Silent Power Limited: *See—*
Sands, Gilbert; and Jennens, Ian H., 4,395,231, Cl. 432-11.000.

Cho, Mitsuo: *See—*
Kishimoto, Juji; Sado, Ichiro; and Cho, Mitsuo, 4,395,704, Cl. 340-365.00S.

Chow, Sui-Wu; and Brode, George L., to Union Carbide Corporation. Process for curing thermosetting resins using sulfur dioxide containing compounds as latent catalysts. 4,395,520, Cl. 525-502.000.

Chow, Sui-Wu; and Brode, George L., to Union Carbide Corporation. Process for curing thermoset resins using phenyl esters of carboxylic acids as latent catalysts. 4,395,521, Cl. 525-502.000.

Chowdhury, Ajit K.; Bauer, Gerald L.; and Lehmann, Richard W., to Sterling Drug Inc. Method of operating pure oxygen wet oxidation systems. 4,395,339, Cl. 210-761.000.

Christensen, Robert B.; and Kramer, Lee F., to Dresser Industries, Inc. Material handling bucket. 4,395,193, Cl. 414-722.000.

Chrysler Corporation: *See—*
Petersdorf, Roland W., 4,395,677, Cl. 324-117.00H.

Ciba-Geigy Corporation: *See—*
Bohner, Beat; and Rempfler, Hermann, 4,395,277, Cl. 71-94.000.
Haase, Jeroslav; Liechti, Peter; Wegmuller, Hans; Warster, Rudolf F.; and Bowes, Quentin, 4,395,546, Cl. 544-168.000.
Sury, Yel S., 4,395,542, Cl. 528-481.000.

Cielakie, Eddie W.: *See—*
Buchan, William R.; and Cielakie, Eddie W., 4,395,113, Cl. 355-15.000.

Ciepiela, Edmund J., to Francis Hankin & Co. Limited. Treatment of brackish water. 4,395,337, Cl. 210-703.000.

Cincinnati-Vulcan Company, The: *See—*
Sturwold, Robert J., 4,395,286, Cl. 106-14.130.

Ciongwa, Joachim; Heckmann, Werner; Jendrichowski, Klaus; Quest, Karl; Ruppell, Christian; and Sushardt, Wolfgang, to Holstein und Kappert GmbH. Suction arrangement in a bottle-cleaning machine for removing of labels from bottles. 4,394,867, Cl. 134-104.000.

Clarey, Michael E., to Singer Company, The. Drill, drill chuck, and methods of chucking and unchucking. 4,395,170, Cl. 408-241.00R.

Clarion Co., Ltd.: *See—*
Hayashi, Hideki; and Takai, Kazuki, 4,394,995, Cl. 242-207.000.

Clarke, David E., to Advance Lifts, Inc. Bridging bar attachment means for bi-elevational platform lift. 4,394,888, Cl. 187-1.00R.

Clarostat Mfg. Co., Inc.: *See—*
Ward, Frank L., 4,395,711, Cl. 340-870.310.

Clayton Manufacturing Company: *See—*
Gniewek, Stephen A.; and Olsen, Dick M., 4,395,679, Cl. 324-379.000.

Clevenholm, Roy L. R.; and Mellqvist, Carl-Olof H., to Landskrona Finans AB. Cooking apparatus having a stirring device. 4,395,133, Cl. 366-241.000.

Cliffe, David A.: *See—*
Cotgreave, Terence; and Cliffe, David A., 4,394,931, Cl. 220-453.000.

Clorox Company, The: *See—*
Maddox, Lodric L., 4,395,344, Cl. 252-99.000.

Clyde, Robert A.; and Crandall, William B. Electric storage heating apparatus. 4,395,620, Cl. 219-378.000.

Coates, Clarence A., Jr.: *See—*
Weaver, Max A.; and Coates, Clarence A., Jr., 4,395,368, Cl. 260-158.000.

Cocolas, George: *See—*
Hall, Iris; Cocolas, George; and Chapman, James M., Jr., 4,395,417, Cl. 424-270.000.

Colamco, Inc.: *See—*
Hammond, James A., 4,395,530, Cl. 528-48.000.

Colangelo, Thomas P., to Mark Levinson Audio Systems Ltd. Ribbon loudspeaker. 4,395,592, Cl. 179-115.00V.

Comfort, Joseph A.; Perry, Thomas J.; and Loos, Michel, to GTE Automatic Electric Labs Inc. Allocation controller providing for access of multiple common resources by a plurality of central processing units. 4,395,753, Cl. 364-200.000.

Commissariat a l'Energie Atomique: *See—*
Costes, Didier, 4,395,381, Cl. 376-293.000.

Commonwealth Scientific and Industrial Research Organization: *See—*
Mathew, Plackottu J., 4,395,633, Cl. 250-357.100.

Communications Satellite Corporation: *See—*
Meulenberg, Andrew, Jr., 4,395,583, Cl. 136-256.000.

Compagnie Honeywell Bull: *See—*
Bienvenu, Jacques; Carre, Claude; Luu, Duc; and Verdier, Henri, 4,395,757, Cl. 364-200.000.

Comparetto, John E. Amphibious sled device. 4,395,241, Cl. 441-65.000.

Connell, Peter P.; and Morgan, Malcolm F., to Racal-Dana Instruments Limited. Frequency synthesizers. 4,395,683, Cl. 331-2.000.

Conrad, Richard A., to Teledyne Industries, Inc. Electrical socket for leadless integrated circuit packages. 4,395,084, Cl. 339-75.0MP.

Consolidated Foods Corporation: *See—*
Goodman, James A., 4,395,253, Cl. 493-87.000.

Consor, Herbert A.: *See—*
Nelson, Thomas E.; and Consor, Herbert A., 4,395,713, Cl. 343-713.000.

Constructie Werkhuizen Vandekerckhove N.V.: *See—*
Wyffels, Achiel, 4,395,132, Cl. 366-147.000.

Control Data Corporation: *See—*
Van Brunt, Nicholas P.; and Ketzler, John H. A., 4,395,767, Cl. 371-25.000.

Cooney, Charles L.; and Schaefer, Eugene J., to Massachusetts Institute of Technology. Process for production of improved maltase. 4,395,490, Cl. 435-201.000.

Cooper Medical Devices: *See*—
Wang, Carl C. T.; Charles, Steve; and Buckingham, Joseph T., 4,395,258, Cl. 604-65.000.
Copal Company Limited: *See*—
Nakamura, Shigekazu, 4,395,695, Cl. 338-32.00H.
Copper Refineries Pty. Ltd.: *See*—
Tsurimoto, Hidetoshi; Tokunaga, Koichi; and Schonfeldt, Martin K., 4,395,175, Cl. 414-21.000.
Corley, Quentin D., Jr. Automatic cargo elevator for vehicle. 4,395,187, Cl. 414-557.000.
Corning Glass Works: *See*—
Beall, George H.; Mansfield, Gerald R.; and Schreurs, Jan W. H., 4,395,271, Cl. 65-31.000.
Blankenship, Michael G.; and Keck, Donald B., 4,395,270, Cl. 65-3.120.
Corrick, Paul M.: *See*—
Hight, Rayburn M.; and Corrick, Paul M., 4,394,984, Cl. 241-278.00R.
Cosmopulos, Stavros. Hand thrown game disc. 4,395,046, Cl. 273-424.000.
Costa, Jorge, to Hermes Precisa International S.A. Typewriter decimal tab mechanism. 4,395,150, Cl. 400-285.000.
Costemalle, Bernard J.: *See*—
Nagano, Hayao; and Costemalle, Bernard J., 4,395,506, Cl. 524-68.000.
Costes, Didier, to Commissariat a l'Energie Atomique. Confinement enclosure, notably for a nuclear reactor. 4,395,381, Cl. 376-293.000.
Costruzioni Meccaniche G. Mazzoni S.p.A.: *See*—
Mazzoni, Guido, 4,394,902, Cl. 198-436.000.
Cotgreave, Terence; and Cliffe, David A., to Shell Internationale Research Maatschappij B. V. Heat-insulated container provided with a locating and/or supporting device. 4,394,931, Cl. 220-453.000.
Coulter Electronics, Inc.: *See*—
Hollinger, John D.; Groves, Michael R.; and Hogg, Walter R., 4,395,676, Cl. 324-71.400.
Zahniser, David J.; and Garcia, Gerardo L., 4,395,493, Cl. 435-289.000.
Courduvelis, Constantine I., to Enthone Incorporated. Metal dissolution process using H_2O_2—H_2SO_4 etchant. 4,395,302, Cl. 156-642.000.
Coutin, Pierre F., to R. Alkan & Cie. Device for suspending under aircraft miscellaneous loads with variable distance between centers. 4,395,003, Cl. 244-137.00R.
Covill, James H.; Kelly, Michael G.; and Leahy, Thomas F., to American Hoechst Corporation. Solvent-free esterification of carboxyaromatics. 4,395,566, Cl. 560-87.000.
Cox, A. Benns, II: *See*—
Smith, Robert C.; and Cox, A. Benns, II, 4,395,233, Cl. 432-176.000.
Crandall, William B.: *See*—
Clyde, Robert A.; and Crandall, William B., 4,395,620, Cl. 219-378.000.
Crane, Frederick G., Jr.: *See*—
Klein, Max, 4,395,332, Cl. 210-496.000.
Crane, Richard A. Adjustable deck board feeder for automatic pallet nailing apparatus. 4,394,952, Cl. 227-7.000.
Crawford, Donald C.: *See*—
McComas, Jerry L.; and Crawford, Donald C., 4,394,896, Cl. 198-341.000.
Crawford, Robert J., to Procter & Gamble Company, The. Alpha-sulfoxide and alpha-sulfone carboxyl compounds. 4,395,363, Cl. 252-526.000.
Crayonne Limited: *See*—
Matthews, John, 4,395,376, Cl. 264-73.000.
Crean, Peter A.; Schneider, John M.; and Lipani, Anthony F., to Xerox Corporation. Bipolar ink jet method and apparatus. 4,395,716, Cl. 346-1.100.
Crenshaw, Ronnie R.: *See*—
Algieri, Aldo A.; and Crenshaw, Ronnie R., 4,395,553, Cl. 546-235.000.
Creusot-Loire: *See*—
Privat, Albert, 4,394,914, Cl. 212-203.000.
Crew, Albert W.: *See*—
Einolf, Charles W., Jr.; Szabo, Andras I.; and Crew, Albert W., 4,395,710, Cl. 340-825.500.
Csermely, Gyorgy: *See*—
Molnar, Attila; Csermely, Gyorgy; and Lanyi, Gyorgy, 4,395,568, Cl. 560-198.000.
Cuisinarts, Inc.: *See*—
Podell, Allen F., 4,395,670, Cl. 318-758.000.
Cukier, Samuel. Treatment of coal tar emulsions. 4,395,326, Cl. 208-188.000.
Cummings, Donald R., to D.U.T. Pty Ltd. Production of methanol. 4,395,495, Cl. 518-704.000.
Cummins Engine Company, Inc.: *See*—
Wilber, Dennis A., 4,394,962, Cl. 239-88.000.
Cunningham, Byron H. Safety off-shore drilling and pumping platform. 4,395,157, Cl. 405-60.000.
Cunningham, Donald M., to Emerson Electric Co. Electric circulation heater for heating fluids such as oil. 4,395,618, Cl. 219-298.000.
Curtis, Tommie G.: *See*—
Sikorski, James A.; and Curtis, Tommie G., 4,395,276, Cl. 71-87.000.
Cutchens, Charles E.; Mathews, Marion J., III; and Sowell, Mark S., III, to Monsanto Company. Production and separation of amines. 4,395,573, Cl. 564-492.000.
Cutter Laboratories, Inc.: *See*—
von Alven, Raymond D.; and McGill, Lee E., 4,394,919, Cl. 215-253.000.
Czajka, Dennis C.; and Nordstrand, David P., to Boeing Company, The. Programmable pressure regulator for titanium superplastic forming apparatus. 4,394,871, Cl. 137-115.000.
D.U.T. Pty Ltd.: *See*—
Cummings, Donald R., 4,395,495, Cl. 518-704.000.
D'Agrosa, David D. Burning cell for solid waste fuel materials. 4,394,838, Cl. 110-234.000.
Daicel Chemical Industries, Ltd.: *See*—
Imai, Tatuhiko; and Ohi, Akira, 4,395,516, Cl. 525-71.000.
Daidotokushuko Kabushiki Kaisha: *See*—
Takenouchi, Akira; and Niwa, Yukio, 4,395,280, Cl. 75-28.000.
Dailey Oil Tools, Inc.: *See*—
Briscoe, Edward L., 4,394,883, Cl. 175-304.000.
Dainichi-Nippon Cables, Ltd.: *See*—
Kasashima, Tatsuji; Morita, Shuji; Hayami, Hiroyuki; Ose, Seiroku; Takada, Yoshinori; and Nozaki, Fumihiro, 4,395,320, Cl. 204-206.000.
Dainippon Screen Mfg. Co., Ltd.: *See*—
Hirosawa, Makoto, 4,395,752, Cl. 364-130.000.
Damen, Theodoor C.; and Duguay, Michel A., to Bell Telephone Laboratories, Incorporated. Tunable semiconductor laser. 4,395,769, Cl. 372-7.000.
Damiano, Paul J., to RMI Corporation. Feedback reducer for an acoustic electric guitar. 4,394,830, Cl. 84-1.150.
Damsker, Dorel J., to Gibbs & Hill, Inc. Combined solar conversion. 4,395,582, Cl. 136-248.000.
Danick, Charles: *See*—
Panandiker, K. A. Pai; and Danick, Charles, 4,395,529, Cl. 528-45.000.
Daniels, Edward P., to Pitney Bowes Inc. Processor implemented communications interface having external clock actuated disabling control. 4,395,756, Cl. 364-200.000.
D'Antonio, Nicholas F.; and Knabel, Walter, to Marker-Patentverwertungsgesellschaft GmbH. Electronic safety ski binding with redundant sensors. 4,395,759, Cl. 364-410.000.
Dargel, William O.; Lougheed, Robert M.; McCubbrey, David L.; and Richardson, Ralph E., to Environmental Research Institute of Michigan. Off-image detection circuit for an image analyzer. 4,395,697, Cl. 382-41.000.
Dargel, William O.: *See*—
Sternberg, Stanley R.; Dargel, William O.; Lougheed, Robert M.; McCubbrey, David L.; and Richardson, Ralph E., 4,395,698, Cl. 382-27.000.
Darnanville, Jean P.: *See*—
Germaine, Gilbert R.; and Darnanville, Jean P., 4,395,579, Cl. 585-444.000.
Das, Suryya K.; and Kania, Charles M., to PPG Industries, Inc. Thermosetting cationic acrylic latex compositions containing blocked isocyanates. 4,395,444, Cl. 427-388.400.
Data General Corporation: *See*—
Manktelow, Gerald; and Wolff, Kenneth T., 4,395,663, Cl. 315-403.000.
Dauge, Gilbert V.; Langlais, Jacques F.; and Quehen, Daniel J., to Testut Aequitas. Load receiver with improved fixing means. 4,394,885, Cl. 177-210.00C.
Davies, Arthur B. C.; and Norris, Andrew P., to Plessey Overseas Limited. Waveguide junction for producing circularly polarized signal. 4,395,685, Cl. 333-125.000.
Davis, Denny G.; Emerson, Robert C.; and Banks, George J., Jr., to Almar Products Corporation. Fixture for manufacturing rattan type furniture. 4,395,029, Cl. 269-57.000.
Davis, Henry S.: *See*—
Katz, Edward; Davis, Henry S.; and Scallet, Barrett L., 4,395,292, Cl. 127-29.000.
Davis, R. Elbert. Unitary laminate with permanent indicia pattern: transfer printings onto plastic-coated rigid panels. 4,395,263, Cl. 8-471.000.
Davy Inc.: *See*—
Berzins, Andrejs, 4,395,179, Cl. 414-161.000.
Dawes, Donald, to Scapa Dyers Inc. Spiral fabric papermakers felt and method of making. 4,395,308, Cl. 162-232.000.
Dawson, Robert J., to Falconbridge Limited. Abrasion resistant machinable white cast iron. 4,395,284, Cl. 75-123.0CB.
Day, Ralph K. Multiple pane insulating structure having means for removing moisture between facing surfaces thereof. 4,394,806, Cl. 52-172.000.
Dayco Corporation: *See*—
Wetzel, Robert E.; Fieler, Wayne C.; and Hollaway, Gerald C., 4,395,298, Cl. 156-137.000.
Deason, Max W. Pool deck form for vinyl liner swimming pool. 4,395,014, Cl. 249-9.000.
De Cosmo, Anthony R.; and Young, John H., to United Technologies Corporation. Shroud ring for use in a gas turbine engine. 4,395,195, Cl. 415-137.000.
Deere & Company: *See*—
Prasad, Keni K.; and Hayes, Eugene G., 4,395,249, Cl. 474-93.000.
Rae, Rory, 4,394,976, Cl. 239-679.000.
De Goederen, Cornelis W. J.: *See*—
Kwantes, Arien; and De Goederen, Cornelis W. J., 4,395,576, Cl. 568-913.000.
Degussa AG: *See*—
Eiermann, Kurt; Horlebein, Eberhard; and Schafer, Wolfgang, 4,395,586, Cl. 174-138.00J.

de Haan, Friedrich J., administrator: *See*—
Franssen, Nico V., deceased; de Haan, Friedrich J., administrator; Kaizer, Adrianus J. M.; and Wesche, Cornelis A. M., 4,395,588, Cl. 179-1.00F.
deJong, Sijtze, to Lockheed Corporation. Tensioning system for marine risers and guidelines. 4,395,160, Cl. 405-195.000.
Dekeyser, Mark A.; Pierce, Benjamin J.; Moore, Richard C.; and Hubbard, Winchester L., to Uniroyal, Inc. Pyridopyrimidinone compounds. 4,395,551, Cl. 544-282.000.
Delalande S.A.: *See*—
Langlois, Michel; Bucher, Bernard P.; Dostert, Philippe L.; Lacour, Alain P.; and Moinet, Gerard H., 4,395,416, Cl. 424-267.000.
Delhey, Hans-Martin: *See*—
Braun, Albert; Portz, Willi; Strauss, Georg; and Delhey, Hans-Martin, 4,395,282, Cl. 75-58.000.
Dennikov, Sergei J.: *See*—
Bazarov, Vladimir G.; Kuzmin, Alexei V.; Smaga, Gennady A.; Kapchits, Zelik F.; Dennikov, Sergei J.; and Soosalu, Peter I., 4,395,228, Cl. 431-168.000.
Dennis, Thomas A.: *See*—
Fischer, Harry A.; Koepnick, Paul J.; Dennis, Thomas A.; and Anderson, Joseph R., 4,395,427, Cl. 426-231.000.
Dente, Stephen V.: *See*—
McLaughlin, James H.; Dente, Stephen V.; Carmello, Robert; and Smith, James A., 4,395,347, Cl. 252-139.000.
Denton, Richard A.; and Singh, Bawa, to Denton Vacuum Inc. Apparatus for improving a sputtering process. 4,395,323, Cl. 204-298.000.
Denton Vacuum Inc.: *See*—
Denton, Richard A.; and Singh, Bawa, 4,395,323, Cl. 204-298.000.
DePalma, Anthony M.: *See*—
Lefevre, Marcel R.; and DePalma, Anthony M., 4,395,448, Cl. 428-99.000.
Deraedt, Roger: *See*—
Torelli, Vesperto; Deraedt, Roger; and Nedelec, Lucien, 4,395,408, Cl. 424-238.000.
Derbyshire, Francis J.; Varghese, Philip; and Whitehurst, Darrell D., to Mobil Oil Corporation. Thermal cracking with hydrogen donor diluent. 4,395,324, Cl. 208-56.000.
DeRobertis, Ignatius J.; Hassan, Javathu K.; Judge, Robert L.; and Paivanas, John A., to International Business Machine Corp. Chip shuttle track. 4,395,165, Cl. 406-88.000.
Desgrandchamps, Guy; Kvasnikoff, Georges; and Blanc, Claude, to Scoiete Nationale Elf Aquitaine. Process to produce sulphur from the acid gases, both containing hydrogen sulphide and one of which contains ammonia. 4,395,390, Cl. 423-573.00G.
DeSimone, Robert S.: *See*—
Byrne, Brian; and DeSimone, Robert S., 4,395,430, Cl. 426-534.000.
Deviny, James E.; and Puncoch, Miloslav, to Boeing Company, The. Latch and lock mechanism for an aircraft cargo door assembly. 4,395,000, Cl. 244-118.300.
de Vries, Auke O. T., to N.V. Nederlandse Gasunie. Multimode heating system and method for heating. 4,394,959, Cl. 237-2.00B.
de Vries, Louis; and King, John M., to Chevron Research Company. Antioxidant combinations of sulfur containing molybdenum complexes and organic sulfur compounds. 4,395,343, Cl. 252-32.70E.
Dial-A-Firm International, Inc.: *See*—
Swenson, Gerald R.; Swenson, Emil S.; and Young, Gary A., 4,394,784, Cl. 5-453.000.
Diekmann, Herbert; and Niedrich, Helmut, to Durkoppwerke GmbH. Workpiece guide for automatic sewing machine. 4,394,840, Cl. 112-121.150.
Diesel Kiki Co., Ltd.: *See*—
Takada, Haruhiko, 4,395,203, Cl. 417-282.000.
Di Gioacchino, Sandro: *See*—
Romano, Ugo; Fornasari, Giancarlo; and Di Gioacchino, Sandro, 4,395,565, Cl. 560-24.000.
Digital Equipment Corporation: *See*—
Helenius, Allan; Lackey, Stanley A., Jr.; and Northrup, Thomas A., 4,395,758, Cl. 364-200.000.
Dillinger, Robert B.: *See*—
Stone, W. James; Burklund, Vernon D.; and Dillinger, Robert B., 4,395,001, Cl. 244-122.0AE.
Dinklage, Horst; Fink, Herbert; Frank, Peter; Rauch, Hubert; and Siol, Werner, to Rohm GmbH. Resin dispersions having high pigment binding capacity. 4,395,515, Cl. 524-832.000.
Dise, Ronald S., to Penn Engineering & Manufacturing Corp. Point of operation safety device. 4,395,641, Cl. 307-116.000.
Dittmann, Peter: *See*—
Walz, Kurt; Dittmann, Peter; and Hohne, Hartmut, 4,395,345, Cl. 252-135.000.
Dockstader, Douglas: *See*—
Bartolotti, Frank; and Dockstader, Douglas, 4,395,155, Cl. 404-9.000.
Dr. Ing. h.c.F. Porsche Aktiengesellschaft: *See*—
Mezger, Hans, 4,394,812, Cl. 60-600.000.
Dolan, Michael J.: *See*—
McGovern, Stephen J.; Owens, Peter J.; and Dolan, Michael J., 4,395,325, Cl. 208-113.000.
Doles, Ronald S., to Nalco Chemical Company. Ascension pipe and ascension pipe cap sealers for by-product coke ovens. 4,395,505, Cl. 524-55.000.
Dolida, Roger J.: *See*—
Patel, Nandlal P.; and Dolida, Roger J., 4,394,929, Cl. 220-421.000.
Doltron AG: *See*—
Manella, Paul, 4,395,257, Cl. 494-47.000.
Domdey, Otto F. Process for generating electric power by means of turbogenerators using high pressure vapor. 4,394,815, Cl. 60-649.000.
Donaldson Company, Inc.: *See*—
Schuler, Frederick E., 4,395,269, Cl. 55-302.000.
Donn Incorporated: *See*—
Shirey, Richard, 4,394,794, Cl. 29-432.000.
Doorakian, George A.; and Bertram, James L., to Dow Chemical Co., The. Phosphonium phenoxide catalysts for promoting reaction of epoxides with phenols and/or carboxylic acids. 4,395,574, Cl. 568-11.000.
Dorma Door Controls Inc.: *See*—
Lieberman, Sidney, 4,394,787, Cl. 16-58.000.
Dostert, Philippe L.: *See*—
Langlois, Michel; Bucher, Bernard P.; Dostert, Philippe L.; Lacour, Alain P.; and Moinet, Gerard H., 4,395,416, Cl. 424-267.000.
Doumas, John: *See*—
Ferris, William E., deceased; Hennessy, Gail, executrix; Doumas, John; and McCarter, Harry, 4,395,375, Cl. 264-40.100.
Dover Corporation: *See*—
Brautigan, Richard A., 4,395,017, Cl. 251-306.000.
Dow Chemical Co., The: *See*—
Bertram, James L.; and Woo, Edmund P., 4,395,533, Cl. 528-77.000.
Doorakian, George A.; and Bertram, James L., 4,395,574, Cl. 568-11.000.
Killat, George R., 4,395,306, Cl. 162-156.000.
McDonald, Charles J., 4,395,311, Cl. 203-34.000.
Park, Chung P., 4,395,510, Cl. 524-230.000.
Dow Corning Corporation: *See*—
Gaul, John H., 4,395,460, Cl. 428-408.000.
Polmanteer, Keith E., 4,395,462, Cl. 428-420.000.
Downs, Robert F.; and Santillan, Salvadore C., to Technology Management, Inc. Pivotable multipole switch. 4,395,610, Cl. 200-292.000.
Draiswerke GmbH: *See*—
Marz, Dieter; Schmitt, Philipp; and Weidenhammer, Peter, 4,394,980, Cl. 241-46.020.
Dran, Maurice; and Jamet, Bernard, to Saint Gobain Vitrage. Transparent heating pane. 4,395,622, Cl. 219-522.000.
Dresser Industries, Inc.: *See*—
Christensen, Robert B.; and Kramer, Lee F., 4,395,193, Cl. 414-722.000.
Driver, R. Byron: *See*—
Pierce, O. Leon; Smith, Mark C.; and Driver, R. Byron, 4,395,590, Cl. 179-2.0DP.
Drost, M. Kevin. Central solar energy receiver. 4,394,859, Cl. 126-438.000.
Druzhinin, Ernest A.: *See*—
Golubkov, Sergei V.; Druzhinin, Ernest A.; Zimin, Vladimir M.; Kubasov, Vladimir L.; Lvovich, Florenty I.; and Mazanko, Anatoly F., 4,395,314, Cl. 204-98.000.
Dudik, Roger A.: *See*—
Phillips, Martha E.; and Dudik, Roger A., 4,395,154, Cl. 403-172.000.
Duffy, Joseph J., to Du Pont de Nemours, E. I., and Company. Preforms for reinforcement of battery grids. 4,395,449, Cl. 428-105.000.
Duguay, Michel A.: *See*—
Damen, Theodoor C.; and Duguay, Michel A., 4,395,769, Cl. 372-7.000.
Du Pont de Nemours, E. I., and Company: *See*—
Barrett, Lawrence R.; and Weiner, Allan J., 4,395,075, Cl. 308-2.00R.
Duffy, Joseph J., 4,395,449, Cl. 428-105.000.
Frankosky, Michael S., 4,395,455, Cl. 428-299.000.
Durant, Graham J.; Ganellin, Charon R.; and Young, Rodney C., to Smith Kline & French Laboratories Limited. Pharmacologically active compounds. 4,395,419, Cl. 424-270.000.
Durkoppwerke GmbH: *See*—
Diekmann, Herbert; and Niedrich, Helmut, 4,394,840, Cl. 112-121.150.
Dutra, Gerard A.; and Sikorski, James A., to Monsanto Company. Alkyl N-arylsulfenyl-N-diaryloxy-phosphinylmethylglycinates. 4,395,374, Cl. 260-941.000.
Duvall, Kenneth R., to United States of America, Treasury. Optical paper detector. 4,395,127, Cl. 356-430.000.
DuVall, Zell, to TSI Incorporated. Fluid flow measuring apparatus. 4,394,825, Cl. 73-861.090.
Dvorak, Charles A., to Syntex (U.S.A.) Inc. Process for the preparation of d,l-2-(6-methoxy-2-naphthyl)propionic acid. 4,395,571, Cl. 562-466.000.
Dykes, Wiley V.: *See*—
Rosendahl, Gottfried R.; and Dykes, Wiley V., 4,395,093, Cl. 350-441.000.
Driark, John J.; and Shinohara, Kazuto, to General Electric Silicones. Self-bonding one-component dimedone RTV silicone rubber compositions. 4,395,507, Cl. 524-101.000.
E. P. Remy et Cie.: *See*—
Lebret, Gerard, 4,395,069, Cl. 294-87.220.
E. R. Squibb & Sons, Inc.: *See*—
Ita, Callixtus E.; Heald, Anthony F.; and Egli, Peter, 4,395,556, Cl. 548-126.000.
Eaker, Gerard L.: *See*—
Oller, Osvaldo A.; Hansen, Eric R.; and Eaker, Gerard L., 4,395,290, Cl. 106-100.000.
Eastman Kodak Company: *See*—
Abel, Edward P., 4,395,477, Cl. 430-216.000.
Hoyen, Harry A., 4,395,478, Cl. 430-217.000.

Kildal, Maurice A.; and Hassall, Stephen J., 4,394,990, Cl. 242-65.000.
Morse, John E., 4,395,108, Cl. 355-1.000.
Noonan, John M.; and Perlstein, Jerome H., 4,395,475, Cl. 430-69.000.
Pacifici, James G.; Newland, Gordon C.; and Moore, Howard G., 4,395,539, Cl. 528-291.000.
Weaver, Max A.; and Coates, Clarence A., Jr., 4,395,368, Cl. 260-158.000.

Eaton Corporation: *See*—
Kleinhagen, Charles W., Jr., 4,394,890, Cl. 188-71.900.

Eben, C. Frederick: *See*—
Wilson, Edwin B.; Eben, C. Frederick; Meyer, Charles L.; and Schaeffer, Charles W., 4,395,161, Cl. 405-259.000.

Ebi, Yutaka: *See*—
Horike, Masanori; and Ebi, Yutaka, 4,395,717, Cl. 346-75.000.

Ebisawa, Takashi: *See*—
Oki, Ryuji; and Ebisawa, Takashi, 4,395,777, Cl. 455-183.000.

Ecomard, Andre; and Pinchon, Philippe, to Institut Francais Du Petrole. Fuel pump-injector unitary assembly for internal combustion engine. 4,394,964, Cl. 239-90.000.

Economopoulos, Marios: *See*—
Paulus, Philippe A.; and Economopoulos, Marios, 4,395,022, Cl. 266-106.000.

Edelman, Robert, to Celanese Corporation. Process for preparing a carbon fiber reinforced composite article which utilizes a polyimide matrix. 4,395,514, Cl. 524-600.000.

Ediriwira, Gananath W. Self-righting traffic marker. 4,394,843, Cl. 116-63.00P.

Edwards, Lawrence K. Passenger station for elevated railway system. 4,394,837, Cl. 104-28.000.

EECO Incorporated: *See*—
Williams, Douglas J., 4,395,589, Cl. 179-1.0SW.

Egerer, Josef, to Staedtler & Uhl. Toothed edging means for textile machinery. 4,394,789, Cl. 19-97.000.

Egger, Lambert: *See*—
Sonnweber, Alfred; Bildstein, Hubert; and Egger, Lambert, 4,394,953, Cl. 228-124.000.

Eggert, Albert: *See*—
Kopke, Wolfgang; Muller, Manfred; Schmidt, Wolfgang; Eggert, Albert; Gahleitner, Erwin; and Raupach, Gerhard, 4,395,601, Cl. 179-179.000.

Egli, Peter: *See*—
Ita, Callixtus E.; Heald, Anthony F.; and Egli, Peter, 4,395,556, Cl. 548-126.000.

Egli, Robert, to Sandoz Ltd. 4-Halo-5-formyl thiazoles. 4,395,544, Cl. 542-413.000.

Egli, Werner H.; Setterholm, Jeffrey M.; and Weir, E. Jack, to Honeywell Inc. Helmet metal mass compensation for helmet-mounted sighting system. 4,394,831, Cl. 89-41.0EA.

Egorov, Sergei P.: *See*—
Medovar, Boris I.; Gladky, Evgeny D.; Bondarenko, Oleg P.; Chekotilo, Leonty V.; Zayats, Valery I.; Egorov, Sergei P.; and Skosnyagin, Jury A., 4,395,771, Cl. 373-49.000.

Egyt Gyogyszervegyeszeti Gyar: *See*—
Budai, Zoltan; Lay nee Konya, Aranka; Mezei, Tibor; Petocz, Lujza; Grasser, Katalin; Kosoczky, Ibolya; Szirt nee Kiszelly, Eniko; and Gorog, Peter, 4,395,413, Cl. 424-250.000.

Eibl, Johann; Schwarz, Otto; Elsinger, Fritz; and Philapitsch, Anton, to Immuno Aktiengesellschaft fur Chemisch-medizinische Produkte. Blood-coagulation-promoting preparation based on human proteins and a method of producing the same. 4,395,396, Cl. 424-101.000.

Eicker, Karl-Georg; Schulz, Siegfried; and Seim, Burkhart, to K. A. Schmersal GmbH & Co. Safety switch assemblies. 4,395,608, Cl. 200-153.00L.

Eickhoff, David J.; and Robbins, Medford D., to Procter & Gamble Company, The. Catalysts for oxygen-initiated free-radical polymerization reactions. 4,395,361, Cl. 252-431.00C.

Eida, Tsuyoshi; Yano, Yasuhiro; Haruta, Masahiro; Matsufuji, Yohji; and Ohta, Tokuya, to Canon Kabushiki Kaisha. Liquid recording medium. 4,395,288, Cl. 106-22.000.

Eiermann, Kurt; Horlebein, Eberhard; and Schafer, Wolfgang, to Degussa AG. Holding device for electrical thin layer resistance. 4,395,586, Cl. 174-138.00J.

Einolf, Charles W., Jr.; Szabo, Andras I.; and Crew, Albert W., to Westinghouse Electric Corp. Bus access circuit for high speed digital data communication. 4,395,710, Cl. 340-825.500.

Eistetter, Klaus; Rapp, Erich; and Wolf, Horst, to Byk Gulden Lomberg Chemische Fabrik Gesellschaft mit Beschrankter Haftung. Substituted quinolinone-alkanecarboxylic acids and medicaments containing them, having a hyperglycaemic action. 4,395,414, Cl. 424-258.000.

EKC Technology, Inc.: *See*—
Lee, Wai M., 4,395,348, Cl. 252-143.000.

Electric Power Development Co. Ltd.: *See*—
Nakabayashi, Yasuyuki; Matsuura, Yoshio; Kurihara, Michio; Kamei, Takao; Nakamura, Akira; Komai, Keiichi; Shimotamari, Akira; and Wakabayashi, Takeshi, 4,395,334, Cl. 210-631.000.

Electrolux Corporation: *See*—
Ferris, William E., deceased; Hennessy, Gail, executrix; Doumas, John; and McCarter, Harry, 4,395,375, Cl. 264-40.100.

Electronics Corporation of America: *See*—
Cade, Phillip J., 4,395,224, Cl. 431-31.000.
Cade, Phillip J., 4,395,638, Cl. 250-554.000.

Elenbaas, William J. Television special effects circuit for wiping video signals. 4,395,733, Cl. 358-183.000.

Eli Lilly and Company: *See*—
Molloy, Bryan B.; and Steinberg, Mitchell I., 4,395,410, Cl. 424-244.000.
Ryan, Charles W., 4,395,560, Cl. 549-391.000.

Elkem Metals Company: *See*—
Merkert, Rodney F., 4,395,285, Cl. 75-256.000.

Ellis, John: *See*—
Murphy, John M.; Spensley, Robert H.; and Ellis, John, 4,395,162, Cl. 405-261.000.

Elsinger, Fritz: *See*—
Eibl, Johann; Schwarz, Otto; Elsinger, Fritz; and Philapitsch, Anton, 4,395,396, Cl. 424-101.000.

Elvo Elektronik AG: *See*—
Vogler, Franz, 4,394,785, Cl. 15-21.00D.

Elwart, Jan G.: *See*—
Rembges, Wolfgang; and Elwart, Jan G., 4,395,024, Cl. 266-252.000.

EMC Corporation: *See*—
Pelta, Edmond R., 4,395,678, Cl. 324-132.000.

Emerson Electric Co.: *See*—
Cunningham, Donald M., 4,395,618, Cl. 219-298.000.

Emerson, Robert C.: *See*—
Davis, Denny G.; Emerson, Robert C.; and Banks, George J., Jr., 4,395,029, Cl. 269-57.000.

Emhart Industries, Inc.: *See*—
Sandler, Louis M.; and Bristol, Robert G., 4,395,671, Cl. 318-786.000.

Emmons, William D.; and Stevens, Travis E., to Rohm and Haas Company. Acrylamide copolymer thickener for aqueous systems. 4,395,524, Cl. 526-307.200.

Eng, Kjell, to AB Eiser. Method of absorbing liquids. 4,395,336, Cl. 210-693.000.

Engel, John F., to FMC Corporation. 1R,Cis-3-(2-halo-3,3,3-trifluoro-1-propenyl)-2,2-dimethylcyclopropanecarboxylic acid derivatives. 4,395,567, Cl. 560-124.000.

Engelbach, Klaus-Ludwig: *See*—
Winn, Klaus; Engelbach, Klaus-Ludwig; and Schnirch, Leo, 4,395,080, Cl. 312-257.00R.

Engelsmann, Dieter: *See*—
Luhrig, Hermann; Hoffacker, Franz; Kovacic, Guido; Engelsmann, Dieter; Zobel, Siegfried; Hackenberg, Hubert; and Wagner, Karl, 4,395,107, Cl. 354-275.000.

Engely, Odd: *See*—
Helgeland, Olav; Rudi, Guttorm; and Engely, Odd, 4,395,010, Cl. 248-371.000.

Enthone Incorporated: *See*—
Courduvelis, Constantine I., 4,395,302, Cl. 156-642.000.

Environmental Research Institute of Michigan: *See*—
Dargel, William O.; Lougheed, Robert M.; McCubbrey, David L.; and Richardson, Ralph E., 4,395,697, Cl. 382-41.000.
McCubbrey, David L.; and Richardson, Ralph E., 4,395,700, Cl. 382-27.000.
Sternberg, Stanley R.; Dargel, William O.; Lougheed, Robert M.; McCubbrey, David L.; and Richardson, Ralph E., 4,395,698, Cl. 382-27.000.
Sternberg, Stanley R., 4,395,699, Cl. 382-41.000.

Epps, Stephan R.: *See*—
Lanning, John M.; and Epps, Stephan R., 4,394,913, Cl. 212-189.000.

Epps, Stephen R.; and Gattu, Narahari, to Harnischfeger Corporation. Mobile crane having telescoping outriggers and power operated screw means for same. 4,394,912, Cl. 212-189.000.

Epson Corporation: *See*—
Gomi, Yoshifumi, 4,394,949, Cl. 226-76.000.

Ermes, Neri, to S.I.C.A. Serrande.Infissi.Carpenteria.Attrezzatura S.p.A. Mechanical expansion plug for the internal calibration of plastic material tubes in general, particularly for fashioning the seats for gaskets. 4,395,218, Cl. 425-392.000.

Esaki, Leo; and Chang, Chin A., to United States of America, Army. Heterojunction transistor. 4,395,722, Cl. 357-16.000.

Eskuchen, Frank G., to Eskuchen, Leonard G.; Eskuchen, Raymond F.; and Lindholm, Wayne R. Quick action vise. 4,395,030, Cl. 269-181.000.

Eskuchen, Leonard G.: *See*—
Eskuchen, Frank G., 4,395,030, Cl. 269-181.000.

Eskuchen, Raymond F.: *See*—
Eskuchen, Frank G., 4,395,030, Cl. 269-181.000.

Eztergar, Ernest P. Fractional distillation of hydrocarbons from coal. 4,395,309, Cl. 201-22.000.

Ethyl Corporation: *See*—
Seth, Kishankumar K., 4,395,389, Cl. 423-341.000.

Evans, John M.: *See*—
Wittmann, Joseph W.; and Evans, John M., 4,395,496, Cl. 523-107.000.

Evans, Lee L., to Intersil, Inc. High speed integrating analog-to-digital converter. 4,395,701, Cl. 340-347.0NT.

Ex-Cell-O Corporation: *See*—
Lisiecki, Robert E., 4,394,954, Cl. 229-17.00G.

Exxon Research and Engineering Co.: *See*—
Idenden, John E., 4,395,310, Cl. 203-2.000.
Majewski, Henry A.; Salmre, William; and Van Brimer, R. Hugh, 4,395,719, Cl. 346-140.00R.
Nagano, Hayao; and Costemalle, Bernard J., 4,395,506, Cl. 524-68.000.
Wristers, Harry J., 4,395,358, Cl. 252-429.00B.

Fabrique Nationale Herstal, en abrege F.N., Societe Anonyme: *See*—
Chavee, Rene M.; and Gabriels, Andre J., 4,394,836, Cl. 102-485.000.

Falconbridge Limited: *See*—
Dawson, Robert J., 4,395,284, Cl. 75-123.0CB.

Fan, Steve T., to General Mills, Inc. Dry mix for bread. 4,395,426, Cl. 426-62.000.

Fankhauser, Hanspeter: *See*—
Weil, Wolfgang; Lanz, Andres; Vogt, Max; Meier, Paul; Kaul, Martin; and Fankhauser, Hanspeter, 4,395,614, Cl. 219-72.000.

Farina, James S.: *See*—
Raghu, Sivaraman; Farina, James S.; and Peake, Steven L., 4,395,547, Cl. 544-184.000.

Farmer, Douglas A., Jr.: *See*—
Lines, Ellwood L., Jr.; and Farmer, Douglas A., Jr., 4,395,453, Cl. 428-216.000.

Farnam, Robert G. Method of coating liquid penetrable articles with polymeric dispersions. 4,395,441, Cl. 427-211.000.

Farrand Optical Co., Inc.: *See*—
Shenker, Martin, 4,395,234, Cl. 434-33.000.

Faulkner, Ben V. Method of preventing drill string overflow. 4,394,880, Cl. 175-69.000.

Fayer, Jay A.: *See*—
Barker, Thomas H.; Roach, Thomas L.; Kruse, Richard H.; Fayer, Jay A.; and Bohlman, Eric O., 4,395,627, Cl. 235-381.000.

Fegley, Charles R. Fluid dispensing anti-burglar device. 4,394,934, Cl. 222-5.000.

Fehr, Rudolf: *See*—
Haldimann, Walter; Held, Fritz; and Fehr, Rudolf, 4,395,074, Cl. 305-43.000.

Feissel, Wolfgang, to Siemens Aktiengesellschaft. Data processing system having virtual memory addressing. 4,395,754, Cl. 364-200.000.

Feldmann, Michel; and Henaff, Jeannine. Elastic surface wave recursive filter. 4,395,689, Cl. 333-195.000.

Fenwick, George W., to BASF Wyandotte Corporation. Azo coupling process. 4,395,264, Cl. 8-662.000.

Fernandez, Joseph M.: *See*—
Rosenski, Josephine M.; and Fernandez, Joseph M., 4,395,499, Cl. 523-206.000.

Ferrari, Edward A.: *See*—
Veltman, Jan S.; and Ferrari, Edward A., 4,395,070, Cl. 296-1.00C.

Ferris, William E., deceased; Hennessy, Gail, executrix; Doumas, John; and McCarter, Harry, to Electrolux Corporation. Method of electrically testing molded cord-sets during the molding operation. 4,395,375, Cl. 264-40.100.

F'Geppert, Erwin, to United States of America, Army. Cover hold down mechanism. 4,395,062, Cl. 292-64.000.

Fieler, Wayne C.: *See*—
Wetzel, Robert E.; Fieler, Wayne C.; and Hollaway, Gerald C., 4,395,298, Cl. 156-137.000.

Fike Metal Products Corporation: *See*—
McLelland, Bruce, 4,394,868, Cl. 137-68.00A.

Findley Adhesives Inc.: *See*—
Nelson, Jeffrey, 4,394,915, Cl. 215-12.00R.

Fink, Herbert: *See*—
Dinklage, Horst; Fink, Herbert; Frank, Peter; Rauch, Hubert; and Siol, Werner, 4,395,515, Cl. 524-832.000.

Firth, Kenneth; and Howard, Richard K., to Marconi Company Limited, The. Color selective filters. 4,395,088, Cl. 350-3.700.

Fischbeck, Kenneth H.: *See*—
Grover, Joel W.; and Fischbeck, Kenneth H., 4,395,720, Cl. 346-140.00R.

Fischer, Hannes; and Zimmermann, Rolf, to Hoechst Aktiengesellschaft. Hot melt adhesives. 4,395,525, Cl. 526-307.600.

Fischer, Harry A.; Koepnick, Paul J.; Dennis, Thomas A.; and Anderson, Joseph R., to Werner Lehara, Inc. Method and apparatus for depositing dough on a conveyor. 4,395,427, Cl. 426-231.000.

Fischetti, Frank, Jr.: *See*—
Schmidt, Douglass N.; and Fischetti, Frank, Jr., 4,395,422, Cl. 424-284.000.

Fisons Limited: *See*—
Taylor, James E.; and Stevenson, Neil A., 4,395,421, Cl. 424-283.000.

Fitzpatrick, Donald C.; Guild, Gerald A.; and Karis, Arthur T., to Beloit Corporation. Telescoping air jets for piling. 4,395,038, Cl. 271-195.000.

Flanagan, James L., to Bell Telephone Laboratories, Incorporated. Acoustic differential digital coder. 4,395,593, Cl. 179-1.00F.

Fleck, Harald: *See*—
Aarts, Petrus J. J.; Fleck, Harald; Kocsisek, Karl; and Schmidt, Ernst M., 4,395,745, Cl. 360-129.000.

Fleet Tech, Inc.: *See*—
Wartski, Heinz, 4,395,624, Cl. 377-15.000.

Flider, Frank S., to Justrite Manufacturing Company. Safety can conversion apparatus. 4,394,937, Cl. 222-189.000.

Fluck, Rene, to SIG - Schweizerische Industrie-Gesellschaft. Article grouping apparatus. 4,394,899, Cl. 198-408.000.

FMC Corporation: *See*—
Engel, John F., 4,395,567, Cl. 560-124.000.
Lutz, Charles W., 4,395,261, Cl. 8-111.000.
McComas, Jerry L.; and Crawford, Donald C., 4,394,896, Cl. 198-341.000.
Start, John F., 4,395,548, Cl. 544-190.000.
Wittman, Leroy L.; and Jensen, Lyle B., 4,394,911, Cl. 212-189.000.

Fohl, Artur, to Repa Feinstanzwerk GmbH. Energy absorber for load carrying flexible pulling means. 4,394,992, Cl. 242-85.000.

Fohlen, George M.: *See*—
Varma, Indra K.; Fohlen, George M.; and Parker, John A., 4,395,557, Cl. 548-413.000.

Follmann, Rainer: *See*—
Kramer, Walter; and Follmann, Rainer, 4,395,357, Cl. 252-428.000.

Ford Motor Company: *See*—
Rump, Egon; and Franzen, Wolfgang, 4,394,925, Cl. 220-86.00R.

Forestier, Serge: *See*—
Jacquet, Bernard; Lang, Gerard; Malaval, Alain; Forestier, Serge; and Le Trung, Do, 4,395,541, Cl. 528-367.000.

Fornasari, Giancarlo: *See*—
Romano, Ugo; Fornasari, Giancarlo; and Di Gioacchino, Sandro, 4,395,565, Cl. 560-24.000.

Forsch, Manfred; and Gerhards, Hermann, to Hoechst Aktiengesellschaft. Carbamoyloxyamino-1,4-benzodiazepines and medicaments containing these compounds. 4,395,409, Cl. 424-244.000.

Foshee, William R.: *See*—
Best, Walter E.; and Foshee, William R., 4,394,821, Cl. 70-422.000.

Foster Wheeler Energy Corporation: *See*—
Pratt, Harry H., deceased; and Gill, William J., 4,394,849, Cl. 122-235.00K.

Fothergill, Graham A.; and Osbond, John M., to Hoffmann-La Roche Inc. 2,3-Indoledione derivatives. 4,395,559, Cl. 548-485.000.

Fraleux, Jean, to Thomson - CSF. Solid state image pickup. 4,395,736, Cl. 358-213.000.

Francis Hankin & Co. Limited: *See*—
Ciepiela, Edmund J., 4,395,337, Cl. 210-703.000.

Franetzki, Manfred: *See*—
Prestele, Karl; Franetzki, Manfred; and Reif, Erich, 4,395,259, Cl. 604-67.000.

Frank, Peter: *See*—
Dinklage, Horst; Fink, Herbert; Frank, Peter; Rauch, Hubert; and Siol, Werner, 4,395,515, Cl. 524-832.000.

Franken, Jeffrey J.; Gladney, Walter W.; and Yeich, William R., to Western Electric Co., Inc. Apparatus for forming compactible material into a body. 4,395,219, Cl. 425-405.00R.

Franklin Electric Co., Inc.: *See*—
Whitney, John A.; and Rosenbrock, Richard, 4,394,958, Cl. 236-49.000.

Frankosky, Michael S., to Du Pont de Nemours, E. I., and Company. Polyester fiberfill batting having improved thermal insulating properties. 4,395,455, Cl. 428-299.000.

Franssen, Nico V., deceased; de Haan, Friedrich J., administrator; Kaizer, Adrianus J. M.; and Weseke, Cornelis A. M., to U.S. Philips Corporation. MFB system with a by-pass network. 4,395,588, Cl. 179-1.00F.

Frantz, Richard J., to Timex Corporation. Optional alarm and battery backup system for a talking timepiece. 4,395,135, Cl. 368-63.000.

Franzen, Wolfgang: *See*—
Rump, Egon; and Franzen, Wolfgang, 4,394,925, Cl. 220-86.00R.

Frappier, Guy: *See*—
Campagne, Jean-Claude; and Frappier, Guy, 4,395,429, Cl. 426-271.000.

Frassanito, John R., to Sani-Fresh International, Inc. Dispenser and package for liquid or granular materials. 4,394,938, Cl. 222-207.000.

FRC Composites Limited: *See*—
Karuks, Ergo; and Rohn, Martin, 4,395,159, Cl. 405-172.000.

Frear, David L., to Bendix Corporation, The. Electrical connector having removable contacts. 4,395,083, Cl. 339-59.00R.

Freeman, James D. Self-penetrating fastener for fastening roofing panels to metal beams. 4,395,174, Cl. 411-510.000.

Friauf, Walter S.; Brooks, Rodney A.; Sank, Victor J.; and Cascio, Horace E., to United States of America, Health and Human Services. Gamma ray coincidence analysis system. 4,395,635, Cl. 250-366.000.

Friedrich Grohe Armaturenfabrik GmbH & Co.: *See*—
Backe, Wolfgang; Goedecke, Wolf-Dieter; and Schwenzer, Reinhard, 4,394,965, Cl. 239-102.000.

Friis, Nils: *See*—
Wagner, Burkhard E.; Karol, Frederick J.; Goeke, George L.; Jorgensen, Robert J.; and Friis, Nils, 4,395,359, Cl. 252-429.00B.

Fritts, David H., to United States of America, Air Force. Low pressure nickel hydrogen battery. 4,395,469, Cl. 429-34.000.

Fuji Photo Film Co., Ltd.: *See*—
Horie, Seiji; Nagata, Masayoshi; Nakano, Junji; and Sato, Hideo, 4,395,473, Cl. 430-58.000.
Kitamoto, Tatsuji; and Shirahata, Ryuji, 4,395,439, Cl. 427-132.000.
Matsuda, Terumi; Ishiguro, Shoji; Moriuchi, Shigenori; and Suzuki, Yoshiaki, 4,395,483, Cl. 430-411.000.
Ogawa, Hiroshi; and Tamai, Yasuo, 4,395,466, Cl. 428-695.000.
Ohnishi, Masahiro; Oosaka, Shigenori; and Oono, Hiroshi, 4,395,766, Cl. 369-47.000.
Terasita, Takaaki, 4,395,099, Cl. 354-31.000.

Fuji Xerox Co., Ltd.: *See*—
Murayama, Tomio; Kikuchi, Yoshiki; Moriguchi, Haruhiko; Obmori, Takashi; and Moriguchi, Fujio, 4,395,718, Cl. 346-135.100.
Saitoh, Koichi, 4,395,470, Cl. 430-39.000.

Fujimura, Naoto: *See*—
Kondo, Hideyo; and Fujimura, Naoto, 4,395,474, Cl. 430-67.000.

Fujino, Teruhisa; Osawa, Fujio; Chiwaki, Kenichi; and Narazaki, Sadatoshi, to Kabushiki Kaisha Koden Seisakusho. Jamming wave rejecting device. 4,395,779, Cl. 455-306.000.

Fujisawa Pharmaceutical Co., Ltd.: *See*—
Kamiya, Takashi; Teraji, Tsutomu; Nakai, Yoshiharu; Sakane, Kazuo; and Goto, Jiro, 4,395,411, Cl. 424-246.000.

Fujitsu Fanuc Limited: *See*—
Izumiya, Syunzo, 4,395,612, Cl. 219-69.00P.

Fujitsu Limited: *See*—
Takahashi, Masanori, 4,395,763, Cl. 364-900.000.
Fujiwara, Toshihide: *See*—
Kaneko, Nobutaka; and Fujiwara, Toshihide, 4,395,125, Cl. 356-400.000.
Fukatsu, Shunzo: *See*—
Umezawa, Hamao; Takeuchi, Tomio; Aoyagi, Takaaki; Hachisu, Mitsugu; Kawamura, Kenji; Fukatsu, Shunzo; and Sekizawa, Yasuharu, 4,395,402, Cl. 424-177.000.
Fukui, Kazuyuki, to Minolta Camera Kabushiki Kaisha. Sheet feeding device. 4,395,034, Cl. 271-21.000.
Fukumoto, Yoshiyuki: *See*—
Takagi, Toshinori; Nakata, Shinsaku; Mikami, Yoichi; Hotta, Masahiro; and Fukumoto, Yoshiyuki, 4,395,465, Cl. 428-626.000.
Funfschilling, Peter, to Sandoz Ltd. Tetrahydro-2(1H)-quinazolinones and cyclohexene nitriles. 4,395,550, Cl. 544-253.000.
Furutani, Toshinobu: *See*—
Torisu, Yoshio; Sakurai, Shigenori; Kamo, Takashi; and Furutani, Toshinobu, 4,395,319, Cl. 204-426.000.
Futaba Denshi Kogyo Kabushiki Kaisha: *See*—
Hattori, Takashi; and Makita, Satoru, 4,395,654, Cl. 313-496.000.
G. D. Searle & Co.: *See*—
Muir, Robert D., 4,395,341, Cl. 252-8.55D.
G. D Societa per Azioni: *See*—
Seragnoli, Enzo, 4,395,177, Cl. 414-130.000.
G. S. Blodgett Co., Inc.: *See*—
Smith, Robert C.; and Cox, A. Benns, II, 4,395,233, Cl. 432-176.000.
Gabriels, Andre J.: *See*—
Chavee, Rene M.; and Gabriels, Andre J., 4,394,836, Cl. 102-485.000.
Gacek, Mikkel J.; Oftebro, Reidar; Laland, Soren; and Undheim, Kjell, to Nyegaard & Co. A/S. 5-Halopyrimid-2-ones. 4,395,406, Cl. 424-180.000.
Gahleitner, Erwin: *See*—
Kopke, Wolfgang; Muller, Manfred; Schmidt, Wolfgang; Eggert, Albert; Gahleitner, Erwin; and Raupach, Gerhard, 4,395,601, Cl. 179-179.000.
Gaiser, John W.: *See*—
Gaiser, William R.; and Gaiser, John W., 4,395,222, Cl. 425-548.000.
Gaiser, William R.; and Gaiser, John W., to Broadway Companies, Inc., The. Injection molding apparatus. 4,395,222, Cl. 425-548.000.
Galafassi, Pierre: *See*—
Adam, Jean-Marie; and Galafassi, Pierre, 4,395,545, Cl. 544-74.000.
Galbraith, Andrew R.: *See*—
Ballany, John M.; and Galbraith, Andrew R., 4,395,407, Cl. 424-200.000.
Ganellin, Charon R.: *See*—
Durant, Graham J.; Ganellin, Charon R.; and Young, Rodney C., 4,395,419, Cl. 424-270.000.
Ganssle, Eugene R.; and Samhammer, Nelson F., to RCA Corporation. Modular spacecraft structures. 4,395,004, Cl. 244-158.00R.
Ganssle, Eugene R., to RCA Corporation. Apparatus for remotely indicating alignment of male and female members. 4,395,005, Cl. 244-161.000.
Garber, Eugene L., to JLG Industries, Inc. Boom limit safety control circuit. 4,395,706, Cl. 340-685.000.
Garbis, Dennis J.; and Baker, Donald E. Shielded/jacketed ribbon-cable sheathing stripping tool. 4,394,828, Cl. 81-9.510.
Garcia, Gerardo L.: *See*—
Zahniser, David J.; and Garcia, Gerardo L., 4,395,493, Cl. 435-289.000.
Gargione, Frank, to Keystone Bingo Products, Inc. Game chip. 4,395,043, Cl. 273-239.000.
Gaskell, David J., to Lucas Industries Limited. Fuel injection nozzle assembly. 4,394,971, Cl. 239-453.000.
Gassaway, Lee V. Battery charger controller. 4,395,672, Cl. 320-31.000.
Gattu, Narahari: *See*—
Epps, Stephen R.; and Gattu, Narahari, 4,394,912, Cl. 212-189.000.
Gaul, John H., to Dow Corning Corporation. Preparation of polysilazane polymers and the polymers therefrom. 4,395,460, Cl. 428-408.000.
Gebauer, Gerhard; and Mayer, Franz, to Hoechst Aktiengesellschaft. Coating and primer formulation on the basis of a copolymer of tetrafluoroethylene and a perfluoro-(alkylvinyl) ether, and use thereof. 4,395,445, Cl. 427-407.100.
Geever, Robert F.: *See*—
Wilson, Lois B.; Wilson, John T.; and Geever, Robert F., 4,395,486, Cl. 435-6.000.
Geiger, Rolf: *See*—
Konig, Wolfgang; Geiger, Rolf; and Sandow, Jurgen K., 4,395,400, Cl. 424-177.000.
Gemmani, Giuseppe, to SCM Finanziaria S.p.A. Machine for machining panels, planks and sections or similar, in particular for wood and the derivatives thereof. 4,394,894, Cl. 198-339.000.
General Can Company, Inc.: *See*—
Zysset, Edgar H., 4,394,927, Cl. 220-273.000.
General Dynamics, Pomona Division: *See*—
Maudal, Inge, 4,394,997, Cl. 244-3.160.
General Electric Company: *See*—
Castonguay, Roger N., 4,395,602, Cl. 200-50.0AA.
Ching, Ta-Yen, 4,395,461, Cl. 428-412.000.
Giles, Harold F., Jr.; and White, Dwain M., 4,395,518, Cl. 525-180.000.
Graff, William A., 4,395,653, Cl. 313-112.000.
Harris, Lawrence A., 4,395,322, Cl. 204-290.00F.
Hayes, Susan E., 4,395,563, Cl. 556-459.000.
Kelley, Fred W., Jr., 4,395,674, Cl. 323-210.000.
Kray, William D., 4,395,463, Cl. 428-447.000.
Sexton, Charles W., Jr., 4,395,662, Cl. 315-371.000.
White, Mary A.; Beers, Melvin D.; Lucas, Gary M.; Smith, Robert A.; and Swiger, Roger T., 4,395,526, Cl. 528-18.000.
General Electric Silicones: *See*—
Dziark, John J.; and Shinohara, Kazuto, 4,395,507, Cl. 524-101.000.
General Mills, Inc.: *See*—
Fan, Steve T., 4,395,426, Cl. 426-62.000.
General Mining Union Corporation, Limited: *See*—
Bohme, Rolf C.; and Lazerson, Max M., 4,394,907, Cl. 209-556.000.
Bohme, Rolf C., 4,395,634, Cl. 250-359.100.
General Motors Corporation: *See*—
Lindsay, James H.; La Sala, Joseph; and Ghorashi, Hamid M., 4,395,313, Cl. 204-30.000.
Lopez-Crevillen, Jose M.; and Huber, John W., 4,394,853, Cl. 123-195.00C.
Smith, Richard H.; and Armstrong, Donald J., 4,394,856, Cl. 123-506.000.
Sowash, Thomas R., 4,395,609, Cl. 200-153.0LA.
Swick, Robert M., 4,394,811, Cl. 60-39.28R.
General Signal Corp.: *See*—
O'Hare, Edward J., 4,395,712, Cl. 343-7.300.
Genth, Hermann: *See*—
Paulus, Wilfried; and Genth, Hermann, 4,395,274, Cl. 71-67.000.
George Washington University: *See*—
Low, Teresa L. K.; and Goldstein, Allan L., 4,395,404, Cl. 424-177.000.
Gerety, Robert J.: *See*—
Tabor, Edward; and Gerety, Robert J., 4,395,395, Cl. 424-89.000.
Gerhards, Hermann: *See*—
Forsch, Manfred; and Gerhards, Hermann, 4,395,409, Cl. 424-244.000.
Germaine, Gilbert R.; and Darnanville, Jean P., to Shell Oil Company. Li-spinel catalyst for non-oxidative dehydrogenation process. 4,395,579, Cl. 585-444.000.
Germann, Alfred: *See*—
Boller, Arthur; Germann, Alfred; Schadt, Martin; and Villiger, Alois, 4,395,350, Cl. 252-299.100.
Gertsch, Peter; and Imhof, Robert. Drive for rotary-roller offset printing machines. 4,394,835, Cl. 101-177.000.
Gewerkschaft Eisenhutte Westfalia: *See*—
Weirich, Walter; and Grommas, Werner, 4,394,875, Cl. 137-636.100.
Ghafoori, Abdul R.: *See*—
Berry, Max A., 4,395,230, Cl. 431-286.000.
Ghorashi, Hamid M.: *See*—
Lindsay, James H.; La Sala, Joseph; and Ghorashi, Hamid M., 4,395,313, Cl. 204-30.000.
Giacone, Felice; Becchi, Raffaele; and Ukmar, Boris, to Ing. C. Olivetti & C., S.p.A. Serial printer. 4,395,145, Cl. 400-59.000.
Giannetti, Enzo; and Scata, Umberto, to Montedison S.p.A. Catalyst components and catalysts for the polymerization of alpha-olefins. 4,395,360, Cl. 252-429.00B.
Gibbs & Hill, Inc.: *See*—
Damsker, Dorel J., 4,395,582, Cl. 136-248.000.
Gibson, Dale E., to Leupold & Stevens, Inc. Variable magnification telescopic sight having reticle centering mount. 4,395,096, Cl. 350-560.000.
Giessen, Bill C.: *See*—
Panchanathan, Viswanathan; Ray, Ranjan; and Giessen, Bill C., 4,395,464, Cl. 428-546.000.
Gilch, Heinz G.: *See*—
Bauer, Herbert; Piestert, Gerhard; and Gilch, Heinz G., 4,395,301, Cl. 156-307.500.
Giles, Harold F., Jr.; and White, Dwain M., to General Electric Company. Polyetherimide-acrylate copolymer blends. 4,395,518, Cl. 525-180.000.
Gill, William J.: *See*—
Pratt, Harry H., deceased; and Gill, William J., 4,394,849, Cl. 122-235.00K.
Gingerich, Richard G. W.: *See*—
Vanderpool, Clarence D.; Scheithauer, Richard A.; and Gingerich, Richard G. W., 4,395,278, Cl. 75-0.5AA.
Ginniff, Maurice E.; and Richardson, Eric K., to United Kingdom Atomic Energy Authority. Facilities for the examination of radioactive bodies. 4,394,895, Cl. 198-339.000.
Giordano, Paul J.; and Smierciak, Richard C., to Standard Oil Company. Photochemical conversion and storage of light energy by endoergic isomerizations. 4,394,858, Cl. 126-400.000.
Girard, Alain, to Societa Nationale Industrielle Aerospatiale. Concave mirror constituted by a plurality of plane facets and solar generator comprising such a mirror. 4,395,581, Cl. 136-246.000.
Giraud, Jean M.: *See*—
Gorre, Paul; and Giraud, Jean M., 4,395,087, Cl. 339-278.00R.
Gladky, Evgeny D.: *See*—
Medovar, Boris I.; Gladky, Evgeny D.; Bondarenko, Oleg P.; Chekotilo, Leonty V.; Zayats, Valery I.; Egorov, Sergei P.; and Skosnyagin, Jury A., 4,395,771, Cl. 373-49.000.
Gladney, Walter W.: *See*—
Franken, Jeffrey J.; Gladney, Walter W.; and Yeich, William R., 4,395,219, Cl. 425-405.00R.
Glaser, David. Method of making a display panel. 4,395,244, Cl. 445-25.000.

Gniewek, Stephen A.; and Olsen, Dick M., to Clayton Manufacturing Company. Single sensor engine analyzer with noise rejection and automatic triggering circuit. 4,395,679, Cl. 324-379.000.

Goddard, Errol D.: *See*—
Kulkarni, Ravindra D.; Kanner, Bernard; and Goddard, Errol D., 4,395,352, Cl. 252-321.000.

Goedecke, Wolf-Dieter: *See*—
Backe, Wolfgang; Goedecke, Wolf-Dieter; and Schwenzer, Reinhard, 4,394,965, Cl. 239-102.000.

Goeke, George L.: *See*—
Wagner, Burkhard E.; Karol, Frederick J.; Goeke, George L.; Jorgensen, Robert J.; and Friis, Nils, 4,395,359, Cl. 252-429.00B.

Goethals, Jean M. E. B.; and Krol, Thijs, to U.S. Philips Corporation. Error correction device for data transfer system. 4,395,768, Cl. 371-45.000.

Gohm, Lothar; and Krull, Klaus, to Licentia Patent-Verwaltungs-GmbH. Service-integrated communication transmission and exchange system. 4,395,780, Cl. 455-607.000.

Goldfarb, Adolph E.; and Von Winckelmann, Emil H., to Goldfarb, Adolph E. Ball transfer and capture game and method. 4,395,041, Cl. 273-119.00A.

Goldie, Harry; and Patel, Suman D., to United States of America, Air Force. R.F. Primed plasma limiter for radar receiver protector. 4,395,684, Cl. 333-13.000.

Goldrian, Gottfried A.: *See*—
Bahr, Dietrich J.; and Goldrian, Gottfried A., 4,395,715, Cl. 346-1.100.

Goldstein, Allan L.: *See*—
Low, Teresa L. K.; and Goldstein, Allan L., 4,395,404, Cl. 424-177.000.

Goldstein, Samuel A., to Polsam, Inc. Elasticized overlay. 4,394,803, Cl. 36-51.000.

Goltz, Kurt; and West, William T., to Pennwalt Corporation. Method for manufacturing water glass cement hardeners. 4,395,387, Cl. 423-305.000.

Golubkov, Sergei V.; Druzhinin, Ernest A.; Zimin, Vladimir M.; Kubasov, Vladimir L.; Lvovich, Florenty I.; and Mazanko, Anatoly F. Process for the producing concentrated solution of sodium hydroxide and chlorine. 4,395,314, Cl. 204-98.000.

Gomi, Shintaro: *See*—
Takeda, Shigeki; Shibata, Junichi; Shimakata, Masashi; Oshime, Yasuhiro; Gomi, Shintaro; and Kawamura, Katsuaki, 4,395,714, Cl. 343-725.000.

Gomi, Yoshifumi, to Epson Corporation; and Kabushiki Kaisha Suwa Seikosha. Pin wheel feed mechanism. 4,394,949, Cl. 226-76.000.

Goodman, James A., to Consolidated Foods Corporation. Method of making corrugated packages. 4,395,253, Cl. 493-87.000.

Gorog, Istvan: *See*—
Southgate, Peter D.; and Gorog, Istvan, 4,395,122, Cl. 356-237.000.

Gorog, Peter: *See*—
Budai, Zoltan; Lay nee Konya, Aranka; Mezei, Tibor; Petocz, Lujza; Grasser, Katalin; Kosoczky, Ibolya; Szirt nee Kiszelly, Eniko; and Gorog, Peter, 4,395,413, Cl. 424-250.000.

Gorre, Paul; and Giraud, Jean M., to Socapex. Strip of border-held contact elements for a connection device, and a process for forming such contact elements. 4,395,087, Cl. 339-278.00R.

Goss, Ralph R., to AMP Incorporated. Connector insertion tool. 4,394,795, Cl. 29-739.000.

Goto, Jiro: *See*—
Kamiya, Takashi; Teraji, Tsutomu; Nakai, Yoshiharu; Sakane, Kazuo; and Goto, Jiro, 4,395,411, Cl. 424-246.000.

Gotthold, John P. Method of generating process instructions. 4,395,236, Cl. 434-219.000.

Gottlieb, Milton; and Brandt, Gerald B., to Westinghouse Electric Corp. Bulk acoustic wave integrated optical deflector and monolithic A/D converter using such deflector. 4,395,702, Cl. 340-347.0AD.

Goulding, Terence: *See*—
Jackson, Graham V.; Goulding, Terence; and Bradbury, John A. A., 4,395,456, Cl. 428-304.400.

Graber, Joseph V. Bicycle carrier for vehicles. 4,394,948, Cl. 224-314.000.

Graf, Felix; and Wirz, Armin, to Rieter Machine Works Limited. Winding apparatus for threads or yarns. 4,394,985, Cl. 242-18.0DD.

Graff, William A., to General Electric Company. Electric lamp with neodymium oxide vitreous coating. 4,395,653, Cl. 313-112.000.

Grakauskas, Vytautas: *See*—
Baum, Kurt; Grakauskas, Vytautas; and Berkowitz, Phillip T., 4,395,561, Cl. 549-510.000.

Granda, Edward J.: *See*—
Klemarczyk, Philip T.; Sanders, James M.; Vock, Manfred H.; Vinals, Joaquin F.; Schmitt, Frederick L.; and Granda, Edward J., 4,395,366, Cl. 252-545.000.

Grasser, Katalin: *See*—
Budai, Zoltan; Lay nee Konya, Aranka; Mezei, Tibor; Petocz, Lujza; Grasser, Katalin; Kosoczky, Ibolya; Szirt nee Kiszelly, Eniko; and Gorog, Peter, 4,395,413, Cl. 424-250.000.

Graves, Donald L.: *See*—
MacDonell, Wayne O.; Graves, Donald L.; and Timar, Thomas, 4,395,178, Cl. 414-138.000.

Gray, John E., to Otis Elevator Company. Modified slowdown and braking of an elevator car. 4,394,889, Cl. 187-29.00R.

Green, John C., to Hassy Horticultural Development Ltd. Apparatus for handling harvested material. 4,395,176, Cl. 414-57.000.

Green, John C., to Hassy Horticultural Development Ltd. Method of handling harvested material. 4,395,194, Cl. 414-786.000.

Greenwood, Thomas D.: *See*—
St. Clair, Terry L.; Wolfe, James F.; and Greenwood, Thomas D., 4,395,540, Cl. 528-345.000.

Greier, Josef; and Pomfret, Colin T., to List, Hans. Decompression device in an internal combustion engine. 4,394,851, Cl. 123-182.000.

Greiner, Felix: *See*—
Kienle, Erhard; Kornaker, Walter; and Greiner, Felix, 4,395,692, Cl. 335-284.000.

Grimfjard, Goran, to Asea AB. Treating molten pig iron in a torpedo. 4,395,281, Cl. 75-53.000.

Griset, Norman. Guide clamp. 4,394,800, Cl. 33-443.000.

Grommas, Werner: *See*—
Weirich, Walter; and Grommas, Werner, 4,394,875, Cl. 137-636.100.

Groteke, Daniel E. Pre-wet and reinforced molten metal filter. 4,395,333, Cl. 210-510.000.

Groth, Francis R. Closure clamp for food bags. 4,394,791, Cl. 24-30.50R.

Grove Valve and Regulator Company: *See*—
Van Scoy, Davis A., 4,394,826, Cl. 73-861.610.

Grover, Joel W.; and Fischbeck, Kenneth H., to Xerox Corporation. Configurational reduction of pulse ejector crosstalk. 4,395,720, Cl. 346-140.00R.

Groves, Michael H.: *See*—
Ramsden, Paul N.; and Groves, Michael H., 4,395,630, Cl. 250-237.00G.

Groves, Michael R.: *See*—
Hollinger, John D.; Groves, Michael R.; and Hogg, Walter R., 4,395,676, Cl. 324-71.400.

Gruber, Damie C.; and Robichaud, Bernard J., to Webb Company, The. Apparatus for printing books of signatures and method for same. 4,395,031, Cl. 270-54.000.

Gruner, Manfred; and Hendrischk, Wolfgang, to Mannesmann Aktiengesellschaft. Positioning of a multicolor ribbon. 4,395,148, Cl. 400-212.000.

Grussen, Jean, to Charles A. Breskin Assoc. Inc. Screw cap with tamper-proof hold ring. 4,394,918, Cl. 215-243.000.

GTE Automatic Electric Labs Inc.: *See*—
Comfort, Joseph A.; Perry, Thomas J.; and Loos, Michel, 4,395,753, Cl. 364-200.000.
Kaczkos, John E., 4,395,591, Cl. 179-100.00R.

Gte Products Corporation: *See*—
Houck, David L., 4,395,279, Cl. 75-0.5BB.
Vanderpool, Clarence D.; Scheithauer, Richard A.; and Gingerich, Richard G. W., 4,395,278, Cl. 75-0.5AA.

Guild, Gerald A.: *See*—
Fitzpatrick, Donald C.; Guild, Gerald A.; and Karis, Arthur T., 4,395,038, Cl. 271-195.000.

Gulf & Western Industries, Inc.: *See*—
Olier, Osvaldo A.; Hansen, Eric R.; and Eaker, Gerard L., 4,395,290, Cl. 106-100.000.

Gulotta, Joseph A.: *See*—
Kunkle, Gerald E.; Sensi, John E.; and Gulotta, Joseph A., 4,395,272, Cl. 65-99.500.

Gutnick, David L.; Rosenberg, Eugene; Belsky, Igal; and Zinaida, Zosim, to Petroleum Fermentations N.V. Polyanionic heteropolysaccharide biopolymers. 4,395,353, Cl. 252-356.000.

Gutnick, David L.; Rosenberg, Eugene; Belsky, Igal; and Zinaida, Zosim, to Petroleum Fermentations N.V. Emulsans. 4,395,354, Cl. 252-356.000.

Haase, Jeroslav; Liechti, Peter; Wegmuller, Hans; Wurster, Rudolf F.; and Bowes, Quentin, to Ciba-Geigy Corporation. N-Methylolcarboxamide compounds. 4,395,546, Cl. 544-168.000.

Hachisu, Mitsugu: *See*—
Umezawa, Hamao; Takeuchi, Tomio; Aoyagi, Takaaki; Hachisu, Mitsugu; Kawamura, Kenji; Fukatsu, Shunzo; and Sekizawa, Yasuharu, 4,395,402, Cl. 424-177.000.

Hackenberg, Hubert: *See*—
Luhrig, Hermann; Hoffacker, Franz; Kovacic, Guido; Engelsmann, Dieter; Zobel, Siegfried; Hackenberg, Hubert; and Wagner, Karl, 4,395,107, Cl. 354-275.000.

Hackenberg, Robert A., to Robertson Paper Box Co., Inc. Auto platform carton. 4,394,905, Cl. 206-486.000.

Hackstein, Helmut: *See*—
Hans, Karl; and Hackstein, Helmut, 4,395,587, Cl. 178-30.000.

Hagen, Helmut; Ziegler, Hans; Mappes, Celia J.; and Pommer, Ernst-Heinrich, to BASF Aktiengesellschaft. N-Oxo-pyridin-2-yl-dithio-(4-nitro-2-trichloromethylbenzene) and a fungicidal formulation containing same. 4,395,415, Cl. 424-263.000.

Haldimann, Walter; Held, Fritz; and Fehr, Rudolf, to Huber & Suhner AG. Connecting spike for flexibly connecting two chain links of a track. 4,395,074, Cl. 305-43.000.

Hall, Charles B.; McBride, Edward D.; and Young, Robert F., to Outboard Marine Corporation. Hydraulic system for marine propulsion device with sequentially operating tilt and trim means. 4,395,239, Cl. 440-61.000.

Hall, Iris; Cocolas, George; and Chapman, James M., Jr., to Research Corporation. Antihyperlipidemic compositions. 4,395,417, Cl. 424-270.000.

Halliburton Company: *See*—
McLaughlin, Homer C., 4,395,340, Cl. 252-8.55D.

Halliday, David P.: *See*—
Sharrock, Barry; and Halliday, David P., 4,395,008, Cl. 244-215.000.

Hallquist, Lisa G.: *See*—
Ward, Irl E.; Hallquist, Lisa G.; and Hurley, Thomas J., 4,395,479, Cl. 430-258.000.
Hama, Mamoru, to Mihama Manufacturing Co., Ltd.; and Kato Hatsujo Kaisha, Ltd. Apparatus for manufacture of turbulence member made of synthetic resin. 4,395,210, Cl. 425-71.000.
Hamamsy, Mahmoud A. E., to Bell Telephone Laboratories, Incorporated. Optically toggled latch-free normally off switch. 4,395,637, Cl. 250-551.000.
Hamanishi, Yoshinari, to Nippon Kogaku K.K. Large aperture ratio photographic lens with means for correcting aberrations. 4,395,094, Cl. 350-467.000.
Hammond, James A., to Colamco, Inc. Catalyst initiated prepolymer systems. 4,395,530, Cl. 528-48.000.
Hamprecht, Gerhard: *See*—
Acker, Rolf-Dieter; and Hamprecht, Gerhard, 4,395,555, Cl. 546-289.000.
Han, Kong W., to Internationale Octrooi Maatschappij "Octropa" B.V. Stabilized water-in-mineral oil emulsion. 4,395,266, Cl. 44-51.000.
Hanna Mining Company, The: *See*—
Zambrano, Adolfo R., 4,395,315, Cl. 204-112.000.
Hans, Karl; and Hackstein, Helmut, to Siemens Aktiengesellschaft. Method and apparatus for representing characters. 4,395,587, Cl. 178-30.000.
Hans, Waldemar: *See*—
Sauer, Rudolf; Kienzle, Wolfgang; Paschke, Werner; and Hans, Waldemar, 4,394,973, Cl. 239-467.000.
Hansen, Eric R.: *See*—
Oller, Osvaldo A.; Hansen, Eric R.; and Eaker, Gerard L., 4,395,290, Cl. 106-100.000.
Harada, Masahiro: *See*—
Shimizu, Senzo; Nomura, Isao; Harada, Masahiro; Usui, Motohachi; Taniyama, Susumu; and Yanada, Shigeo, 4,395,534, Cl. 528-126.000.
Haraguchi, Yasushi: *See*—
Noda, Kanji; Nakagawa, Akira; Haraguchi, Yasushi; Ueda, Koichiro; Hirano, Munehiko; Nishioka, Itsuo; Yagi, Akira; Koda, Akihide; and Ide, Hiroyuki, 4,395,405, Cl. 424-180.000.
Harari, Eliyahou. Floating substrate dynamic RAM cell with lower punch-through means. 4,395,723, Cl. 357-23.000.
Harbour, J. Michael: *See*—
Becker, Roger T.; Hathaway, John W.; and Harbour, J. Michael, 4,394,900, Cl. 198-614.000.
Harigai, Hiroshi, to Yamada Electric Industries, Co. Ltd. Hand held hair dryer with shock mounted quartz tube heater. 4,395,619, Cl. 219-377.000.
Harnischfeger Corporation: *See*—
Epps, Stephen R.; and Gattu, Narahari, 4,394,912, Cl. 212-189.000.
Lanning, John M.; and Epps, Stephan R., 4,394,913, Cl. 212-189.000.
Harris Corporation: *See*—
Sellers, Robert W., 4,395,688, Cl. 333-169.000.
Harris, Lawrence A., to General Electric Company. Catalytic electrode. 4,395,322, Cl. 204-290.00F.
Harter, Warren L. Apparatus for forming construction blocks. 4,395,220, Cl. 425-413.000.
Haruta, Masahiro: *See*—
Eida, Tsuyoshi; Yano, Yasuhiro; Haruta, Masahiro; Matsufuji, Yohji; and Ohta, Tokuya, 4,395,288, Cl. 106-22.000.
Kobayashi, Masatsune; Matsumoto, Seiko; Haruta, Masahiro; and Ohta, Tokuya, 4,395,287, Cl. 106-20.000.
Harvey, Edward L.: *See*—
Riggs, Dennis M.; and Harvey, Edward L., 4,395,299, Cl. 156-285.000.
Hasegawa, Katsumi; Kawabata, Takahiro; and Kuge, Shintaro, to Toray Industries, Inc. Yarn winding apparatus. 4,394,986, Cl. 242-18.00R.
Hasegawa, Masami; and Kato, Koji, to Nissan Motor Co., Ltd. Metal cleaning composition containing a fatty acid succrose ester and other detergent components. 4,395,365, Cl. 252-545.000.
Hashimoto, Michiaki: *See*—
Sasano, Akira; Nakano, Toshio; Tsutsui, Ken; Hashimoto, Michiaki; Kaneko, Tadao; Taniguchi, Yoshio; Matsumaru, Haruo; and Izumi, Akiya, 4,395,629, Cl. 250-226.000.
Hassall, Stephen J.: *See*—
Kildal, Maurice A.; and Hassall, Stephen J., 4,394,990, Cl. 242-65.000.
Hassan, Javathu K.: *See*—
DeRobertis, Ignatius J.; Hassan, Javathu K.; Judge, Robert L.; and Paivanas, John A., 4,395,165, Cl. 406-88.000.
Hassy Horticultural Development Ltd.: *See*—
Green, John C., 4,395,176, Cl. 414-57.000.
Green, John C., 4,395,194, Cl. 414-786.000.
Hatazawa, Kikuo: *See*—
Ohno, Mitsuo; Hatazawa, Kikuo; and Abe, Akira, 4,395,721, Cl. 346-160.000.
Hathaway, John W.: *See*—
Becker, Roger T.; Hathaway, John W.; and Harbour, J. Michael, 4,394,900, Cl. 198-614.000.
Hattori, Takashi; and Makita, Satoru, to Futaba Denshi Kogyo Kabushiki Kaisha. Fluorescent display apparatus. 4,395,654, Cl. 313-496.000.
Hauschildt, Hans: *See*—
Birkle, Siegfried; Rubner, Roland; Hauschildt, Hans; and Rissel, Eva-Maria, 4,395,481, Cl. 430-326.000.
Hauser, Oscar G.; and Ruckdeschel, Frederick R., to Xerox Corporation. Blended toners of functional color. 4,395,471, Cl. 430-45.000.
Hayami, Hiroyuki: *See*—
Kasashima, Tatsuji; Morita, Shuji; Hayami, Hiroyuki; Ose, Seiroku; Takada, Yoshinori; and Nozaki, Fumihiro, 4,395,320, Cl. 204-206.000.
Hayasaka, Hiroshi: *See*—
Okigami, Noboru; Hayasaka, Hiroshi; Sekiguchi, Yoshitoshi; and Tamura, Harushige, 4,395,223, Cl. 431-10.000.
Hayashi, Hideki; and Takai, Kazuki, to Clarion Co., Ltd. Reel-turntable torque adjusting means. 4,394,995, Cl. 242-207.000.
Hayashi, Teruo: *See*—
Ohki, Eiji; Oida, Sadao; Yoshida, Akira; Hayashi, Teruo; and Sugawara, Shinichi, 4,395,418, Cl. 424-270.000.
Hayashi, Tomoharu: *See*—
Suzuki, Kiyoaki; Watanabe, Masaru; Yamamoto, Hisashi; Hayashi, Tomoharu; and Miura, Takuji, 4,395,597, Cl. 179-115.50R.
Hayashi, Yoshimasa, to Nissan Motor Company, Limited. Cylinder block for automotive internal combustion engine. 4,394,850, Cl. 123-41.740.
Hayes, Eugene G.: *See*—
Prasad, Keni K.; and Hayes, Eugene G., 4,395,249, Cl. 474-93.000.
Hayes, Leonard L.: *See*—
Nelson, Ben L.; and Hayes, Leonard L., 4,395,065, Cl. 292-339.000.
Hayes, Susan E., to General Electric Company. Hydrolysis of alkoxysilanes. 4,395,563, Cl. 556-459.000.
Heald, Anthony F.: *See*—
Ita, Callixtus E.; Heald, Anthony F.; and Egli, Peter, 4,395,556, Cl. 548-126.000.
Heckmann, Werner: *See*—
Ciongwa, Joachim; Heckmann, Werner; Jendrichowski, Klaus; Quest, Karl; Ruppell, Christian; and Sushardt, Wolfgang, 4,394,867, Cl. 134-104.000.
Hedlund, Lee V.; and Herzog, Donald G., to RCA Corporation. Helical scan tape recording and/or replay apparatus. 4,395,738, Cl. 358-335.000.
Heimberg, Eli, to Cameo Curtains, Inc. Drapery package. 4,394,996, Cl. 242-222.000.
Heimel, Helmut: *See*—
Ross, Rudi; and Heimel, Helmut, 4,395,632, Cl. 250-343.000.
Heine, Helmut: *See*—
Hohl, Rolf; and Heine, Helmut, 4,395,491, Cl. 435-262.000.
Heine, Rolf, to Herbert Kannegiesser GmbH & Co. Apparatus for stacking textile fabric sheets on top of one another. 4,395,037, Cl. 271-188.000.
Held, Fritz: *See*—
Haldimann, Walter; Held, Fritz; and Fehr, Rudolf, 4,395,074, Cl. 305-43.000.
Helenius, Allan; Lackey, Stanley A., Jr.; and Northrup, Thomas A., to Digital Equipment Corporation. Accelerator processor for a data processing system. 4,395,758, Cl. 364-200.000.
Helgeland, Olav; Rudi, Guttorm; and Engely, Odd, to Tandberg Data A/S. Device for the setting up of a data display device on a work surface. 4,395,010, Cl. 248-371.000.
Hellin, Michel: *See*—
Juguin, Bernard; Miquel, Jean; Hellin, Michel; and Torck, Bernard, 4,395,580, Cl. 585-639.000.
Helmut Darda Spielwaren- und Maschinenbau GmbH: *See*—
Muller, Werner, 4,394,961, Cl. 238-10.00R.
Helzer, Lawrence E., to Hughes Tool Company. Swivel unit. 4,395,061, Cl. 285-281.000.
Hemsworth, George R.: *See*—
Wolff, John S., III; Hemsworth, George R.; and Jensen, Keith E., 4,395,394, Cl. 424-88.000.
Henaff, Jeannine: *See*—
Feldmann, Michel; and Henaff, Jeannine, 4,395,689, Cl. 333-195.000.
Henderson, William A., Jr.; and Singh, Balwant, to American Cyanamid Company. Manufacture of isocyanate. 4,395,369, Cl. 260-453.00P.
Hendrischk, Wolfgang, to Mannesmann Aktiengesellschaft. Drive for friction rolls in printers. 4,395,152, Cl. 400-569.000.
Hendrischk, Wolfgang: *See*—
Gruner, Manfred; and Hendrischk, Wolfgang, 4,395,148, Cl. 400-212.000.
Henkel Kommanditgesellschaft auf Aktien: *See*—
Thor, Gunter; Stoffler, Albert; and Mehl, Dietholf, 4,394,939, Cl. 222-207.000.
Hennessy, Gail, executrix: *See*—
Ferris, William E., deceased; Hennessy, Gail, executrix; Doumas, John; and McCarter, Harry, 4,395,375, Cl. 264-40.100.
Hensley, Albert L., Jr.; and Quick, Leonard M., to Standard Oil Company (Indiana). Catalyst and support, their methods of preparation, and processes employing same. 4,395,328, Cl. 208-251.00H.
Heraeus-Christ GmbH: *See*—
Schroter, Gerhard, 4,395,256, Cl. 494-38.000.
Herbert Kannegiesser GmbH & Co.: *See*—
Heine, Rolf, 4,395,037, Cl. 271-188.000.
Hercules Incorporated: *See*—
Byrne, Brian; and DeSimone, Robert S., 4,395,430, Cl. 426-534.000.
Herder, Kornelis; and Olderaan, Wilhelmus F. T. C., to Wavin B.V. Method and device for forming an internal annular groove in a plastic tube part. 4,395,379, Cl. 264-573.000.
Hermecz, Istvan; Kokosi, Jozsef; Horvath, Agnes; Meszaros, Zoltan; Szasz, Gyorgy; Breining, Tibor; and Vasvari nee Debreczy, Lelle, to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara Rt. 6-

Hydrazono-pyrido[2,1-b] quinazoline-11 ones. 4,395,549, Cl. 544-252.000.
Hermes Precisa International S.A.: *See*—
Costa, Jorge, 4,395,150, Cl. 400-285.000.
Herrington, F. John, to Mobil Oil Corporation. Tubular extrusion apparatus. 4,395,221, Cl. 425-467.000.
Herschdorfer, C. George; and Vaughan, Dennis J. Reinforced laminates produced from crosslinkable thermoplastic olefin polymer material. 4,395,459, Cl. 428-391.000.
Herzog, Donald G.: *See*—
Hedlund, Lee V.; and Herzog, Donald G., 4,395,738, Cl. 358-335.000.
Hewlett-Packard GmbH: *See*—
Traub, Stefan, 4,395,642, Cl. 307-261.000.
Hidaka, Akio: *See*—
Watanabe, Teruoki; Kanno, Tadao; Hidaka, Akio; and Kobayashi, Shunji, 4,395,025, Cl. 266-257.000.
Hierath, Leonard L.: *See*—
Andrews, James S.; and Hierath, Leonard L., 4,394,956, Cl. 231-2.00E.
Hight, Rayburn M.; and Corrick, Paul M., to Polar Bear, Inc. Ice block loading mechanism for an ice shaving machine. 4,394,984, Cl. 241-278.00R.
Hilbig, Manfred: *See*—
Beltrop, Herbert; Teutenberg, Josef; and Hilbig, Manfred, 4,395,164, Cl. 406-74.000.
Hilby, Noel E.: *See*—
Simmons, Gerald C.; and Hilby, Noel E., 4,395,068, Cl. 294-78.00R.
Hill, Walter A.: *See*—
Bare, Clyde A., Jr.; Bare, Buddy L.; and Hill, Walter A., 4,394,975, Cl. 239-654.000.
Hipp, Richard D., Jr., to Minnesota Mining and Manufacturing Company. Document feeder. 4,395,032, Cl. 271-10.000.
Hirabayashi, Tsugio: *See*—
Ura, Hiroaki; Hirabayashi, Tsugio; and Koiso, Junichi, 4,395,114, Cl. 355-15.000.
Hirano, Munehiko: *See*—
Noda, Kanji; Nakagawa, Akira; Haraguchi, Yasushi; Ueda, Koichiro; Hirano, Munehiko; Nishioka, Itsuo; Yagi, Akira; Koda, Akihide; and Ide, Hiroyuki, 4,395,405, Cl. 424-180.000.
Hirano, Senzaburo: *See*—
Tomizawa, Fumio; Sobata, Katsutoshi; Yoshimatsu, Yoshiaki; Saito, Sadayuki; Otani, Takashi; and Hirano, Senzaburo, 4,395,023, Cl. 266-158.000.
Hirano, Shyoji: *See*—
Sanpei, Hideo; Matsuno, Kunio; Hirano, Shyoji; and Kumagai, Katuya, 4,395,435, Cl. 427-38.000.
Hirano, Toshio: *See*—
Saito, Takashi; Hirano, Toshio; and Kumaki, Takashi, 4,395,744, Cl. 360-97.000.
Hirosawa, Makoto, to Dainippon Screen Mfg. Co., Ltd. Digital control process with inverse function table memory. 4,395,752, Cl. 364-130.000.
Hirose, Fuminori: *See*—
Yano, Masayoshi; and Hirose, Fuminori, 4,395,079, Cl. 312-7.100.
Hiruta, Masaru: *See*—
Satoh, Hiroaki; and Hiruta, Masaru, 4,395,362, Cl. 252-511.000.
Hisamitsu Pharmaceutical Co., Inc.: *See*—
Noda, Kanji; Nakagawa, Akira; Haraguchi, Yasushi; Ueda, Koichiro; Hirano, Munehiko; Nishioka, Itsuo; Yagi, Akira; Koda, Akihide; and Ide, Hiroyuki, 4,395,405, Cl. 424-180.000.
Hitachi Construction Machinery Co., Ltd.: *See*—
Izumi, Eiki; Watanabe, Hiroshi; Aoyagi, Yukio; Honma, Kazuo; and Nakajima, Kichio, 4,395,199, Cl. 417-53.000.
Hitachi, Ltd.: *See*—
Asakura, Yamato; Suzuki, Teiji; and Kawamura, Fumio, 4,395,386, Cl. 423-249.000.
Kanda, Hiroshi; Ishikawa, Isao; Kondo, Toshio; and Katakura, Kageyoshi, 4,394,824, Cl. 73-606.000.
Nagae, Yoshiharu; Kitajima, Masaaki; and Kawakami, Hideaki, 4,395,709, Cl. 340-784.000.
Ohno, Mitsuo; Hatazawa, Kikuo; and Abe, Akira, 4,395,721, Cl. 346-160.000.
Saito, Toru, 4,395,335, Cl. 210-675.000.
Sasano, Akira; Nakano, Toshio; Tsutsui, Ken; Hashimoto, Michiaki; Kaneko, Tadao; Taniguchi, Yoshio; Matsumaru, Haruo; and Izumi, Akiya, 4,395,629, Cl. 250-226.000.
Toyama, Noboru; and Oyamada, Yoshinori, 4,395,243, Cl. 445-6.000.
Wakai, Katsuro, 4,395,755, Cl. 364-200.000.
Yoshinaga, Yoichi; Nishida, Hideo; and Ueda, Shinjiro, 4,395,197, Cl. 415-211.000.
Hitachi Shipbuilding & Engineering Co., Ltd.: *See*—
Okigami, Noboru; Hayasaka, Hiroshi; Sekiguchi, Yoshitoshi; and Tamura, Harushige, 4,395,223, Cl. 431-10.000.
Hobbins, Norris D.; and Roberts, Ronald F., to Bell Telephone Laboratories, Incorporated. Copper corrosion inhibitor. 4,395,294, Cl. 148-6.14R.
Hodl, Fritz; and Kassegger, Friedrich, to Arbed S.A. Refractory gas-permeable structural unit. 4,395,026, Cl. 266-265.000.
Hoechst Aktiengesellschaft: *See*—
Braun, Albert; Portz, Willi; Strauss, Georg; and Delhey, Hans-Martin, 4,395,282, Cl. 75-58.000.
Fischer, Hannes; and Zimmermann, Rolf, 4,395,525, Cl. 526-307.600.
Forsch, Manfred; and Gerhards, Hermann, 4,395,409, Cl. 424-244.000.
Gebauer, Gerhard; and Mayer, Franz, 4,395,445, Cl. 427-407.100.
Hohl, Rolf; and Heine, Helmut, 4,395,491, Cl. 435-262.000.
Konig, Wolfgang; Geiger, Rolf; and Sandow, Jurgen K., 4,395,400, Cl. 424-177.000.
Lohr, Gernot; and Reinecke, Rolf, 4,395,500, Cl. 523-221.000.
Sprintschnik, Gerhard, 4,395,480, Cl. 430-309.000.
Hoener, Dieter W.; Lambert, Neville L.; and Schweizer, Erwin V., to Boeing Company, The. Cargo restraint system with spring fuse. 4,395,172, Cl. 410-84.000.
Hoffacker, Franz: *See*—
Luhrig, Hermann; Hoffacker, Franz; Kovacic, Guido; Engelsmann, Dieter; Zobel, Siegfried; Hackenberg, Hubert; and Wagner, Karl, 4,395,107, Cl. 354-275.000.
Hoffmann, Benjamin, to Trochoid Power Corporation. Seal compensated geometry rotary motion device. 4,395,206, Cl. 418-61.00A.
Hoffmann-La Roche Inc.: *See*—
Boller, Arthur; Germann, Alfred; Schadt, Martin; and Villiger, Alois, 4,395,350, Cl. 252-299.100.
Chan, Ka-Kong; and Pawson, Beverly A., 4,395,575, Cl. 568-442.000.
Fothergill, Graham A.; and Osbond, John M., 4,395,559, Cl. 548-485.000.
Hoffmann, Wolfgang, to B & H Manufacturing Company, Inc. Base cup applying apparatus and method. 4,395,300, Cl. 156-294.000.
Hofmann, Karl; Seifert, Kurt; and Jungbauer, Josef, to Robert Bosch GmbH. Fuel injection nozzle for combustion engines. 4,394,970, Cl. 239-453.000.
Hogg, Walter R.: *See*—
Hollinger, John D.; Groves, Michael R.; and Hogg, Walter R., 4,395,676, Cl. 324-71.400.
Hohl, Rolf; and Heine, Helmut, to Hoechst Aktiengesellschaft. Method for isolating solid matter from a salinomycin culture broth. 4,395,491, Cl. 435-262.000.
Hohne, Hartmut: *See*—
Walz, Kurt; Dittmann, Peter; and Hohne, Hartmut, 4,395,345, Cl. 252-135.000.
Hollaway, Gerald C.: *See*—
Wetzel, Robert E.; Fieler, Wayne C.; and Hollaway, Gerald C., 4,395,298, Cl. 156-137.000.
Hollenbeck, John C. Food container/holder. 4,394,906, Cl. 206-525.000.
Hollinger, John D.; Groves, Michael R.; and Hogg, Walter R., to Coulter Electronics, Inc. Focused aperture module. 4,395,676, Cl. 324-71.400.
Holmes, David D., to RCA Corporation. FM Counter detector. 4,395,735, Cl. 358-198.000.
Holstein und Kappert GmbH: *See*—
Ciongwa, Joachim; Heckmann, Werner; Jendrichowski, Klaus; Quest, Karl; Ruppell, Christian; and Sushardt, Wolfgang, 4,394,867, Cl. 134-104.000.
Honda Giken Kogyo Kabushiki Kaisha: *See*—
Sato, Makoto; Ohmori, Taiji; and Tsuchiya, Yoshikazu, 4,395,761, Cl. 364-426.000.
Watanabe, Teruoki; Kanno, Tadao; Hidaka, Akio; and Kobayashi, Shunji, 4,395,025, Cl. 266-257.000.
Honda, Satoru: *See*—
Sunaga, Yoshimitsu; Kamiura, Toshio; and Honda, Satoru, 4,395,743, Cl. 360-90.000.
Honeywell Inc.: *See*—
Egli, Werner H.; Setterholm, Jeffrey M.; and Weir, E. Jack, 4,394,831, Cl. 89-41.0EA.
Honig, Helmut; and Pampouchidis, Georgios, to Vianova Kunstharz, A. G. Cathodically depositable coating compositions for electrodeposition (II). 4,395,502, Cl. 523-415.000.
Honma, Kazuo: *See*—
Izumi, Eiki; Watanabe, Hiroshi; Aoyagi, Yukio; Honma, Kazuo; and Nakajima, Kichio, 4,395,199, Cl. 417-53.000.
Hopper, Steven P.: *See*—
Kanner, Bernard; and Hopper, Steven P., 4,395,564, Cl. 556-470.000.
Horie, Seiji; Nagata, Masayoshi; Nakano, Junji; and Sato, Hideo, to Fuji Photo Film Co., Ltd. Electrophotographic sensitive materials containing barbituric acid or thiobarbituric acid derivaties. 4,395,473, Cl. 430-58.000.
Horike, Masanori; and Ebi, Yutaka, to Ricoh Company, Ltd. Ink jet recording apparatus. 4,395,717, Cl. 346-75.000.
Horiuchi, Tatsuo: *See*—
Saito, Narimasa; and Horiuchi, Tatsuo, 4,395,487, Cl. 435-22.000.
Horlebein, Eberhard: *See*—
Eiermann, Kurt; Horlebein, Eberhard; and Schafer, Wolfgang, 4,395,586, Cl. 174-138.00J.
Hornung, Robert; and Lebesnerais, Gerard, to International Business Machines Corp. System for compensating the offset voltage of a differential amplifier. 4,395,681, Cl. 330-259.000.
Horton, Richard F., to United States of America, Navy. Optical system for infrared tracking. 4,395,095, Cl. 350-504.000.
Horvath, Agnes: *See*—
Hermecz, Istvan; Kokosi, Jozsef; Horvath, Agnes; Meszaros, Zoltan; Szasz, Gyorgy; Breining, Tibor; and Vasvari nee Debreczy, Lelle, 4,395,549, Cl. 544-252.000.
Hosokowa, Kiyoshi: *See*—
Shimizu, Chiyuki; and Hosokowa, Kiyoshi, 4,395,443, Cl. 427-387.000.

Hosono, Nagao; and Tajima, Hatsuo, to Canon Kabushiki Kaisha. Developing device with applicator contoured to stir developer applied to a developer support. 4,395,110, Cl. 355-3.0DD.
Hosono, Nagao: *See*—
Kanbe, Junichiro; Toyono, Tsutomu; Hosono, Nagao; and Takahashi, Tohru, 4,395,476, Cl. 430-102.000.
Hotta, Masahiro: *See*—
Takagi, Toshinori; Nakata, Shinsaku; Mikami, Yoichi; Hotta, Masahiro; and Fukumoto, Yoshiyuki, 4,395,465, Cl. 428-626.000.
Houck, David L., to Gte Products Corporation. Plasma spray powder. 4,395,279, Cl. 75-0.5BB.
Howaldtswerke Deutsche Werft Aktiengesellschaft Hamburg und Kiel: *See*—
Pietsch, Gunter; Walter, Gerhard; Mewes, Gunter; and Schrader, Gert, 4,395,141, Cl. 384-147.000.
Howard, Richard K.: *See*—
Firth, Kenneth; and Howard, Richard K., 4,395,088, Cl. 350-3.700.
Howland, Leland L.: *See*—
Brownfield, Jerry A.; Sandberg, Richard J.; Niemi, Thomas J.; and Howland, Leland L., 4,394,818, Cl. 62-239.000.
Hoyen, Harry A., to Eastman Kodak Company. Direct-positive core-shell emulsions and photographic elements and processes for their use. 4,395,478, Cl. 430-217.000.
Hruby, Jan; and Pleskac, Karel, to Zbrojovka Vsetin, narodni podnik. Arrangement for constant feeding of yarn. 4,394,988, Cl. 242-47.120.
HTC Corporation, The: *See*—
Spigarelli, Donald J., 4,394,802, Cl. 34-27.000.
Huang, Ben T. Graphite impregnated polyamide tennis strings. 4,395,458, Cl. 428-367.000.
Hubbard, Winchester L.: *See*—
Dekeyser, Mark A.; Pierce, Benjamin J.; Moore, Richard C.; and Hubbard, Winchester L., 4,395,551, Cl. 544-282.000.
Huber, John W.: *See*—
Lopez-Crevillen, Jose M.; and Huber, John W., 4,394,853, Cl. 123-195.00C.
Huber, Lothar, to Luk Lamellen und Kupplungsbau GmbH. Method and apparatus for separably connecting crankshafts in internal combustion engines. 4,394,854, Cl. 123-198.00F.
Huber & Suhner AG: *See*—
Haldimann, Walter; Held, Fritz; and Fehr, Rudolf, 4,395,074, Cl. 305-43.000.
Hughes Aircraft Company: *See*—
Knauer, Wolfgang, 4,395,691, Cl. 335-210.000.
Knechtli, Ronald C.; Loo, Robert Y.; and Kamath, G. Sanjiv, 4,395,293, Cl. 148-1.500.
Lloyd, Randahl B., 4,395,708, Cl. 340-784.000.
Hughes, Howard C., to Research Corporation. S-A Node helical lead for atrial pacemakers and method of placement. 4,394,866, Cl. 128-785.000.
Hughes Tool Company: *See*—
Helzer, Lawrence E., 4,395,061, Cl. 285-281.000.
Hula, Carl J. Space board game apparatus. 4,395,044, Cl. 273-253.000.
Humphries, Donald N.: *See*—
Wood, Laurior A.; and Humphries, Donald N., 4,394,844, Cl. 118-260.000.
Hunt, Keith: *See*—
King, Alan G.; and Hunt, Keith, 4,395,251, Cl. 474-111.000.
Hunt, Ronald E., to International Business Machines Corporation. Air shingler. 4,395,035, Cl. 271-97.000.
Hurley, Thomas J.: *See*—
Ward, Irl E.; Hallquist, Lisa G.; and Hurley, Thomas J., 4,395,479, Cl. 430-258.000.
HyJacker Products, Inc.: *See*—
McCormick, Robert C., 4,394,946, Cl. 223-115.000.
Iannone, Samuel J. Insert for a stove. 4,394,857, Cl. 126-60.000.
Ichinose, Isao: *See*—
Kunimoto, Go; Ichinose, Isao; Suzuki, Noboru; and Mori, Fumio, 4,395,446, Cl. 428-35.000.
Ide, Hiroyuki: *See*—
Noda, Kanji; Nakagawa, Akira; Haraguchi, Yasushi; Ueda, Koichiro; Hirano, Munehiko; Nishioka, Itsuo; Yagi, Akira; Koda, Akihide; and Ide, Hiroyuki, 4,395,405, Cl. 424-180.000.
Idenden, John E., to Exxon Research and Engineering Co. Fractionation system. 4,395,310, Cl. 203-2.000.
Igarashi, Yoshiaki: *See*—
Yokobori, Nobuyoshi; Maeda, Tetsuo; and Igarashi, Yoshiaki, 4,395,682, Cl. 330-260.000.
Igata, Kouichi: *See*—
Kobayashi, Masaaki; Igata, Kouichi; and Takeuchi, Akihiro, 4,395,741, Cl. 360-77.000.
Iijima, Tokuzo; Samejima, Yasushi; Kishimoto, Kazuo; and Kono, Kimihiko, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Separator electrolytic cell. 4,395,321, Cl. 204-252.000.
Illinois Tool Works Inc.: *See*—
Sygnator, Henry A., 4,395,173, Cl. 411-387.000.
Imada, Kiyoshi; Ueno, Susumu; and Nomura, Hirokazu, to Shin-Etsu Chemical Co., Ltd. Method for improving surface properties of shaped articles of synthetic resins. 4,395,434, Cl. 427-38.000.
Imai, Tatuhiko; and Ohi, Akira, to Daicel Chemical Industries, Ltd. Thermoplastic resin compositions comprising copolymer of unsaturated dicarboxylic acid anhydride and vinyl aromatic monomer, ABS, and methylmethacrylate polymer. 4,395,516, Cl. 525-71.000.
Imaizumi, Hiroyuki: *See*—
Saikawa, Isamu; Takano, Shuntaro; Imaizumi, Hiroyuki; Takakura, Isamu; Ochiai, Hirokazu; Yasuda, Takashi; Taki, Hideo; Tai, Masaru; and Kodama, Yutaka, 4,395,412, Cl. 424-246.000.
Imhof, Robert: *See*—
Gertsch, Peter; and Imhof, Robert, 4,394,835, Cl. 101-177.000.
Immuno Aktiengesellschaft fur Chemisch-medizinische Produkte: *See*—
Eibl, Johann; Schwarz, Otto; Elsinger, Fritz; and Philapitsch, Anton, 4,395,396, Cl. 424-101.000.
Imperial Chemical Industries Limited: *See*—
Jackson, Graham V.; Goulding, Terence; and Bradbury, John A. A., 4,395,456, Cl. 428-304.400.
Ing. C. Olivetti. & C., S.p.A.: *See*—
Giacone, Felice; Becchi, Raffaele; and Ukmar, Boris, 4,395,145, Cl. 400-59.000.
Inoue, Nori, to Tokai Electric Wire Company Limited. Waterproof connector. 4,395,085, Cl. 339-94.00R.
Institut Bioorganicheskoi Khimii Imeni M.M. Shemyakina Akademii Nauk SSSR: *See*—
Ovchinnikov, Jury A.; Ivanov, Vadim T.; Rostovtseva, Larisa I.; Andronova, Tatyana M.; Sorokina, Irina B.; and Malkova, Veronika P., 4,395,399, Cl. 424-177.000.
Institut Francais du Petrole: *See*—
Auboir, Pierre; Bonnefond, Pierre; and Mank, Larry, 4,395,330, Cl. 208-309.000.
Ecomard, Andre; and Pinchon, Philippe, 4,394,964, Cl. 239-90.000.
Juguin, Bernard; Miquel, Jean; Hellin, Michel; and Torck, Bernard, 4,395,580, Cl. 585-639.000.
Institute of Gas Technology: *See*—
St. John, Michael R., 4,395,316, Cl. 204-129.000.
International Business Machine Corp.: *See*—
DeRobertis, Ignatius J.; Hassan, Javathu K.; Judge, Robert L.; and Paivanas, John A., 4,395,165, Cl. 406-88.000.
International Business Machines Corporation: *See*—
Bahr, Dietrich J.; and Goldrian, Gottfried A., 4,395,715, Cl. 346-1.100.
Cases, Moises; Kraft, Wayne R.; Moore, Victor S.; Stahl, William L., Jr.; and Thoma, Nandor G., 4,395,646, Cl. 307-468.000.
Hornung, Robert; and Lebesnerais, Gerard, 4,395,681, Cl. 330-259.000.
Hunt, Ronald E., 4,395,035, Cl. 271-97.000.
Janssen, Donovan M.; Magno, Robert; Seaward, William S.; and Valent, James A., 4,395,033, Cl. 271-10.000.
International Flavors & Fragrances Inc.: *See*—
Boden, Richard M.; Tyszkiewicz, Theodore J.; and Licciardello, Michael, 4,395,370, Cl. 260-463.000.
Boden, Richard M., 4,395,425, Cl. 426-3.000.
Klemarczyk, Philip T.; Sanders, James M.; Vock, Manfred H.; Vinals, Joaquin F.; Schmitt, Frederick L.; and Granda, Edward J., 4,395,366, Cl. 252-545.000.
International Standard Electric Corporation: *See*—
Kienle, Erhard; Kornaker, Walter; and Greiner, Felix, 4,395,692, Cl. 335-284.000.
International Telephone and Telegraph Corporation: *See*—
Pernyeszi, Joseph, 4,395,645, Cl. 307-450.000.
Internationale Octrooi Maatschappij "Octropa" B.V.: *See*—
Han, Kong W., 4,395,266, Cl. 44-51.000.
Intersil, Inc.: *See*—
Evans, Lee L., 4,395,701, Cl. 340-347.0NT.
Inui, Kenichi: *See*—
Aoike, Nanjou; Inui, Kenichi; and Koshimura, Yasunobu, 4,395,659, Cl. 315-209.00R.
Iochi, Akihiko: *See*—
Nakata, Kazuo; Iochi, Akihiko; Kaise, Isamu; Takeuchi, Kazuo; and Nomura, Katsuhiko, 4,395,119, Cl. 356-73.000.
Iowa Manufacturing Company of Cedar Rapids, Iowa: *See*—
Musil, Joseph E., 4,395,129, Cl. 366-25.000.
Isao, Koga: *See*—
Yohji, Terui; Isao, Koga; and Nobumasa, Ohtake, 4,395,562, Cl. 556-431.000.
Isenberg, Arnold O., to Westinghouse Electric Corp. Fuel cell generator. 4,395,468, Cl. 429-31.000.
Ishiguro, Shoji: *See*—
Matsuda, Terumi; Ishiguro, Shoji; Moriuchi, Shigenori; and Suzuki, Yoshiaki, 4,395,483, Cl. 430-411.000.
Ishihara, Koji: *See*—
Maeda, Masanori; Ishihara, Koji; and Kino, Yoshio, 4,395,617, Cl. 219-145.100.
Ishikawa, Isao: *See*—
Kanda, Hiroshi; Ishikawa, Isao; Kondo, Toshio; and Katakura, Kageyoshi, 4,394,824, Cl. 73-606.000.
Ishikawajima-Harima Jukogyo Kabushiki Kaisha: *See*—
Tanaka, Hiroto; Kohno, Yasumasa; Tanaka, Hideyuki; and Sasaki, Kotaro, 4,395,746, Cl. 361-143.000.
Tomizawa, Fumio; Sobata, Katsutoshi; Yoshimatsu, Yoshiaki; Saito, Sadayuki; Otani, Takashi; and Hirano, Senzaburo, 4,395,023, Cl. 266-158.000.
Isomura, Hukuyosi: *See*—
Murakami, Shozo; Isomura, Hukuyosi; and Koga, Yoshihiro, 4,395,283, Cl. 75-60.000.
Ita, Callixtus E.; Heald, Anthony F.; and Egli, Peter, to E. R. Squibb & Sons, Inc. Nitrobenzofuran derivatives. 4,395,556, Cl. 548-126.000.
Itoh, Masayoshi: *See*—
Toyoda, Toshihiro; Kawamata, Motoo; Osawa, Masanori; Itoh, Masayoshi; Mizutani, Kazumi; and Kono, Masahiro, 4,395,531, Cl. 528-49.000.
Itoh, Takayuki, to Asahi Kogaku Kogyo Kabushiki Kaisha. Compact telephoto zoom lens. 4,395,092, Cl. 350-427.000.

ITT Industries, Inc.: *See*—
Belart, Juan, 4,395,072, Cl. 303-114.000.
Weiler, Rolf; and Boehm, Peter, 4,394,832, Cl. 91-376.00R.
Weiler, Rolf; and Wagner, Wilfried, 4,394,833, Cl. 91-376.00R.

Ivanov, Vadim T.: *See*—
Ovchinnikov, Jury A.; Ivanov, Vadim T.; Rostovtseva, Larisa I.; Andronova, Tatyana M.; Sorokina, Irina B.; and Malkova, Veronika P., 4,395,399, Cl. 424-177.000.

Iwahashi, Hiroshi; and Asano, Masamichi, to Tokyo Shibaura Denki Kabushiki Kaisha. Nonvolatile semiconductor memory device. 4,395,724, Cl. 357-23.0VT.

Iwasa, Masaru: *See*—
Terakado, Ryoji; Iwasa, Masaru; Takahashi, Ituo; Anzawa, Norio; and Yoshida, Gen, 4,395,021, Cl. 266-85.000.

Iwata, Masatoshi, to Kabushiki Kaisha Komatsu Seisakusho. Fuel injection nozzle. 4,394,963, Cl. 239-89.000.

Izumi, Akiya: *See*—
Sasano, Akira; Nakano, Toshio; Tsutsui, Ken; Hashimoto, Michiaki; Kaneko, Tadao; Taniguchi, Yoshio; Matsumaru, Haruo; and Izumi, Akiya, 4,395,629, Cl. 250-226.000.

Izumi, Eiki; Watanabe, Hiroshi; Aoyagi, Yukio; Honma, Kazuo; and Nakajima, Kichio, to Hitachi Construction Machinery Co., Ltd. Control method of a system of internal combustion engine and hydraulic pump. 4,395,199, Cl. 417-53.000.

Izumiya, Syunzo, to Fujitsu Fanuc Limited. Power source circuit for electric discharge machine. 4,395,612, Cl. 219-69.00P.

J. T. Baker Chemical Company: *See*—
Ward, Irl E.; Hallquist, Lisa G.; and Hurley, Thomas J., 4,395,479, Cl. 430-258.000.

Jackson, Graham V.; Goulding, Terence; and Bradbury, John A. A., to Imperial Chemical Industries Limited. Inorganic foam. 4,395,456, Cl. 428-304.400.

Jacquet, Bernard; Lang, Gerard; Malaval, Alain; Forestier, Serge; and Le Trung, Do, to Societe Anonyme dite: L'Oreal. Ionene polymer and preparation thereof. 4,395,541, Cl. 528-367.000.

Jacquin, Yves: *See*—
Le Page, Jean-Francois; Billon, Alain; and Jacquin, Yves, 4,395,329, Cl. 208-251.00H.

Jamer, Ernst R. Self locking container closure. 4,394,920, Cl. 215-253.000.

James, Jack E.: *See*—
Wharton, James H.; and James, Jack E., 4,395,737, Cl. 358-312.000.

Jamet, Bernard: *See*—
Dran, Maurice; and Jamet, Bernard, 4,395,622, Cl. 219-522.000.

Janssen, Donovan M.; Magno, Robert; Seaward, William S.; and Valent, James A., to International Business Machines Corporation. Shingling with controlled force and/or velocity. 4,395,033, Cl. 271-10.000.

Janssen Pharmaceutica N.V.: *See*—
Ballany, John M.; and Galbraith, Andrew R., 4,395,407, Cl. 424-200.000.

Jendrichowski, Klaus: *See*—
Ciongwa, Joachim; Heckmann, Werner; Jendrichowski, Klaus; Quest, Karl; Ruppell, Christian; and Sushardt, Wolfgang, 4,394,867, Cl. 134-104.000.

Jennens, Ian H.: *See*—
Sands, Gilbert; and Jennens, Ian H., 4,395,231, Cl. 432-11.000.

Jensen, Keith E.: *See*—
Wolff, John S., III; Hemsworth, George R.; and Jensen, Keith E., 4,395,394, Cl. 424-88.000.

Jensen, Lyle B.: *See*—
Wittman, Leroy L.; and Jensen, Lyle B., 4,394,911, Cl. 212-189.000.

Jette, Emile. Showerhead control. 4,394,969, Cl. 239-414.000.

Jeumont-Schneider: *See*—
Timmermans, Francis; and Vandervorst, Jean, 4,395,048, Cl. 277-65.000.

JLG Industries, Inc.: *See*—
Garber, Eugene L., 4,395,706, Cl. 340-685.000.

Johns, William H.: *See*—
Stalson, Stanley L.; and Johns, William H., 4,394,786, Cl. 15-306.00A.

Johnson, Donald R.: *See*—
Barr, James L.; and Johnson, Donald R., 4,395,613, Cl. 219-69.00E.

Johnson, Everett A.: *See*—
Silverman, Daniel; and Johnson, Everett A., 4,395,628, Cl. 235-382.000.

Johnson & Johnson: *See*—
Korpman, Ralf, 4.394,930, Cl. 220-444.000.

Jordan Chemical Company: *See*—
Login, Robert B.; and Berke, Robert L., 4,395,373, Cl. 260-928.000.

Jordan, David D.: *See*—
Taig, Alistair G.; and Jordan, David D., 4,395,246, Cl. 464-153.000.

Jorgensen, Robert J.: *See*—
Wagner, Burkhard E.; Karol, Frederick J.; Goeke, George L.; Jorgensen, Robert J.; and Friis, Nils, 4,395,359, Cl. 252-429.00B.

Judge, Robert L.: *See*—
DeRobertis, Ignatius J.; Hassan, Javathu K.; Judge, Robert L.; and Paivanas, John A., 4,395,165, Cl. 406-88.000.

Juergens, Geerd F.: *See*—
Leutner, Bernd; Purucker, Berndhard; Rother, Eberhard; Juergens, Geerd F.; and Wagner, Dieter, 4,395,273, Cl. 71-11.000.

Juguin, Bernard; Miquel, Jean; Hellin, Michel; and Torck, Bernard, to Institut Francais Du Petrole. Process for producing an olefin by decomposition of the correspondinr ether. 4,395,580, Cl. 585-639.000.

Junghauer, Josef: *See*—
Hofmann, Karl; Seifert, Kurt; and Junghauer, Josef, 4,394,970, Cl. 239-453.000.

Justrite Manufacturing Company: *See*—
Flider, Frank S., 4,394,937, Cl. 222-189.000.

K. A. Schmersal GmbH & Co.: *See*—
Eicker, Karl-Georg; Schulz, Siegfried; and Seim, Burkhart, 4,395,608, Cl. 200-153.00L.

Kabushiki Kaisha Daini Seikosha: *See*—
Namiki, Masayuki; Kamiya, Masaaki; Kojima, Yoshikazu; and Tanaka, Kojiro, 4,395,139, Cl. 374-178.000.

Kabushiki Kaisha Fujikoshi: *See*—
Tonomura, Takashi, 4,395,051, Cl. 279-75.000.

Kabushiki Kaisha Koden Seisakusho: *See*—
Fujino, Terushisa; Osawa, Fujio; Chiwaki, Kenichi; and Narazaki, Sadatoshi, 4,395,779, Cl. 455-306.000.

Kabushiki Kaisha Komatsu Seisakusho: *See*—
Iwata, Masatoshi, 4,394,963, Cl. 239-89.000.

Kabushiki Kaisha Suwa Seikosha: *See*—
Chihara, Hiroyuki, 4,395,138, Cl. 368-204.000.
Gomi, Yoshifumi, 4,394,949, Cl. 226-76.000.

K.K. Yoshioka Seisakusho: *See*—
Yoshioka, Yoshitomo, 4,394,942, Cl. 222-361.000.

KACA Corporation: *See*—
Ulsky, Carl M., 4,394,983, Cl. 241-243.000.

Kackos, Edward M., to Vernitron Corporation. Apparatus for controlling temperature below 212 degrees fahrenheit in a sterilizer chamber. 4,395,383, Cl. 422-112.000.

Kaczkos, John E., to GTE Automatic Electric Labs Inc. Arrangement for supporting a telephone handset or the like. 4,395,591, Cl. 179-100.00R.

Kaduk, James A., to Standard Oil Company (Indiana). Synthetic cristobalite. 4,395,388, Cl. 423-339.000.

Kaise, Isamu: *See*—
Nakata, Kazuo; Iochi, Akihiko; Kaise, Isamu; Takeuchi, Kazuo; and Nomura, Katsuhiko, 4,395,119, Cl. 356-73.000.

Kaiser-Farmer Development Corp.: *See*—
Kaiser, Robert T., 4,395,039, Cl. 272-126.000.

Kaiser, Josef. Excavator-hoist construction vehicle. 4,395,191, Cl. 414-694.000.

Kaiser, Robert T., to Kaiser-Farmer Development Corp. Method of exercising. 4,395,039, Cl. 272-126.000.

Kaizer, Adrianus J. M.: *See*—
Franssen, Nico V., deceased; de Haan, Friedrich J., administrator; Kaizer, Adrianus J. M.; and Wesche, Cornelis A. M., 4,395,588, Cl. 179-1.00F.

Kalamazoo Conveyor Company: *See*—
Becker, Roger T.; Hathaway, John W.; and Harbour, J. Michael, 4,394,900, Cl. 198-614.000.

Kaldenbach, Robert J.: *See*—
Wondergem, Hendrik M.; and Kaldenbach, Robert J., 4,395,762, Cl. 364-484.000.

Kalfas, Paul P. Electric cord support bracket assembly for lawnmowers and the like. 4,395,053, Cl. 280-47.340.

Kamath, G. Sanjiv: *See*—
Knechtli, Ronald C.; Loo, Robert Y.; and Kamath, G. Sanjiv, 4,395,293, Cl. 148-1.500.

Kamei, Takao: *See*—
Nakabayashi, Yasuyuki; Matsuura, Yoshio; Kurihara, Michio; Kamei, Takao; Nakamura, Akira; Komai, Keiichi; Shimotamari, Akira; and Wakabayashi, Takeshi, 4,395,334, Cl. 210-631.000.

Kamiura, Toshio: *See*—
Sunaga, Yoshimitsu; Kamiura, Toshio; and Honda, Satoru, 4,395,743, Cl. 360-90.000.

Kamiya, Masaaki: *See*—
Namiki, Masayuki; Kamiya, Masaaki; Kojima, Yoshikazu; and Tanaka, Kojiro, 4,395,139, Cl. 374-178.000.

Kamiya, Takashi; Teraji, Tsutomu; Nakai, Yoshiharu; Sakane, Kazuo; and Goto, Jiro, to Fujisawa Pharmaceutical Co., Ltd. Pyrimidinyl cephalosporanic acid derivatives and pharmaceutical compositions. 4,395,411, Cl. 424-246.000.

Kamo, Takashi: *See*—
Torisu, Yoshio; Sakurai, Shigenori; Kamo, Takashi; and Furutani, Toshinobu, 4,395,319, Cl. 204-426.000.

Kanbe, Junichiro; Toyono, Tsutomu; Hosono, Nagao; and Takahashi, Tohru, to Canon Kabushiki Kaisha. Developing method for developer transfer under A.C. electrical bias and apparatus therefor. 4,395,476, Cl. 430-102.000.

Kanda, Hiroshi; Ishikawa, Isao; Kondo, Toshio; and Katakura, Kageyoshi, to Hitachi, Ltd. Acoustic microscope. 4,394,824, Cl. 73-606.000.

Kanebo, Ltd.: *See*—
Kondo, Yoshikazu; Yamamoto, Toshihiro; and Yamamoto, Takaji, 4,395,377, Cl. 264-46.100.

Kanebo Synthetic Fibers, Ltd.: *See*—
Kondo, Yoshikazu; Yamamoto, Toshihiro; and Yamamoto, Takaji, 4,395,377, Cl. 264-46.100.

Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See*—
Iijima, Tokuzo; Samejima, Yasushi; Kishimoto, Kazuo; and Kono, Kimihiko, 4,395,321, Cl. 204-252.000.
Yonezawa, Kazuya; Asada, Masahiro; and Matsuura, Miyuki, 4,395,537, Cl. 528-219.000.

Kaneko, Nobutaka; and Fujiwara, Toshihide, to Olympus Optical Co., Ltd. Centering system. 4,395,125, Cl. 356-400.000.

Kaneko, Tadao: *See*—
Sasano, Akira; Nakano, Toshio; Tsutsui, Ken; Hashimoto, Michiaki; Kaneko, Tadao; Taniguchi, Yoshio; Matsumaru, Haruo; and Izumi, Akiya, 4,395,629, Cl. 250-226.000.

Kania, Charles M.: *See*—
Das, Suryya K.; and Kania, Charles M., 4,395,444, Cl. 427-388.400.

Kanner, Bernard; and Hopper, Steven P., to Union Carbide Corporation. Process for the preparation of alkoxyhydridosilanes. 4,395,564, Cl. 556-470.000.

Kanner, Bernard: *See*—
Kulkarni, Ravindra D.; Kanner, Bernard; and Goddard, Errol D., 4,395,352, Cl. 252-321.000.

Kanno, Tadao: *See*—
Watanabe, Teruoki; Kanno, Tadao; Hidaka, Akio; and Kobayashi, Shunji, 4,395,025, Cl. 266-257.000.

Kant, Michel: *See*—
Berna, Michel; Kant, Michel; Vilain, Jean P.; and Seger, Rene, 4,395,669, Cl. 318-502.000.

Kantojarvi, Jouni; Lahti, Pertti; and Lindholm, Veikko. Emergency draining mechanism for the centrifugal spreader of an airplane. 4,395,002, Cl. 244-136.000.

Kao Soap Co., Ltd.: *See*—
Murata, Moriyasu; and Okahashi, Kenji, 4,395,364, Cl. 252-526.000.

Kapchits, Zelik F.: *See*—
Bazarov, Vladimir G.; Kuzmin, Alexei V.; Smaga, Gennady A.; Kapchits, Zelik F.; Dennikov, Sergei J.; and Soosalu, Peter I., 4,395,228, Cl. 431-168.000.

Karis, Arthur T.: *See*—
Fitzpatrick, Donald C.; Guild, Gerald A.; and Karis, Arthur T., 4,395,038, Cl. 271-195.000.

Karol, Frederick J.: *See*—
Wagner, Burkhard E.; Karol, Frederick J.; Goeke, George L.; Jorgensen, Robert J.; and Friis, Nils, 4,395,359, Cl. 252-429.00B.

Karuks, Ergo; and Rohn, Martin, to FRC Composites Limited. Mechanical protection coating for coated metal substrate. 4,395,159, Cl. 405-172.000.

Kasai, Masaji; Shirahata, Kunikatsu; and Kono, Motomichi, to Kyowa Hakko Kogyo Kabushiki Kaisha. 9-Epi-mitomycin B and D compounds. 4,395,558, Cl. 548-422.000.

Kasashima, Tatsuji; Morita, Shuji; Hayami, Hiroyuki; Ose, Seiroku; Takada, Yoshinori; and Nozaki, Fumihiro, to Dainichi-Nippon Cables, Ltd. Apparatus for producing electrodeposited wires. 4,395,320, Cl. 204-206.000.

Kashiwa, Norio: *See*—
Minami, Syuji; Kashiwa, Norio; Kato, Akifumi; and Watanabe, Junichi, 4,395,519, Cl. 525-240.000.

Kashiwagi, Michio; and Nakajima, Kiichi, to Toray Industries, Inc. Dry electrophotographic toner comprising small, polymer coated particles as flow agent. 4,395,485, Cl. 430-903.000.

Kashiwagi, Takashi; and Kasutani, Hiroshi, to Mitsubishi Kinzoku Kabushiki Kaisha. Drill bit. 4,395,169, Cl. 408-59.000.

Kassegger, Friedrich: *See*—
Hodl, Fritz; and Kassegger, Friedrich, 4,395,026, Cl. 266-265.000.

Kastelic, John R.; Charbonneau, Larry F.; and Carter, Thomas P., Jr., to Celanese Corporation. Thermotropic liquid crystal polymer pulp and method of preparation thereof wherein said polymer comprises recurring units which contain a 2,6-dioxyanthraquinone moiety. 4,395,307, Cl. 162-157.300.

Kasuga, Muneo: *See*—
Tsuda, Hiroshi; Miyashita, Kiyoshi; Shimizu, Akira; Nishikawa, Masaji; and Kasuga, Muneo, 4,395,115, Cl. 355-25.000.

Kasutani, Hiroshi: *See*—
Kashiwagi, Takashi; and Kasutani, Hiroshi, 4,395,169, Cl. 408-59.000.

Katakura, Kageyoshi: *See*—
Kanda, Hiroshi; Ishikawa, Isao; Kondo, Toshio; and Katakura, Kageyoshi, 4,394,824, Cl. 73-606.000.

Kato, Akifumi: *See*—
Minami, Syuji; Kashiwa, Norio; Kato, Akifumi; and Watanabe, Junichi, 4,395,519, Cl. 525-240.000.

Kato Hatsujo Kaisha, Ltd.: *See*—
Hama, Mamoru, 4,395,210, Cl. 425-71.000.

Kato, Koji: *See*—
Hasegawa, Masami; and Kato, Koji, 4,395,365, Cl. 252-545.000.

Kato, Tadaharu: *See*—
Nishitani, Takao; and Kato, Tadaharu, 4,395,595, Cl. 179-84.0VF.

Katsygin, Vitaly V.: *See*—
Sidorenko, Georgy I.; Stankevich, Vladimar I.; Katsygin, Vitaly V.; and Lopato, Georgy P., 4,394,865, Cl. 128-782.000.

Katz, Edward; Davis, Henry S.; and Scallet, Barrett L., to Anheuser-Busch, Incorporated. High fructose syrup and process for making same. 4,395,292, Cl. 127-29.000.

Kaufman, Marvin L.; and Salathe, George F., to Mobil Oil Corporation. Chemically modified imidazole curing catalysts for epoxy resins and powder coatings containing them. 4,395,522, Cl. 525-524.000.

Kaul, Martin: *See*—
Weil, Wolfgang; Lanz, Andres; Vogt, Max; Meier, Paul; Kaul, Martin; and Fankhauser, Hanspeter, 4,395,614, Cl. 219-72.000.

Kaup & Co. KG: *See*—
Kaup, Otmar, 4,395,188, Cl. 414-622.000.

Kaup, Otmar, to Kaup & Co. KG. Load carrying arrangement for a lift truck. 4,395,188, Cl. 414-622.000.

Kawabata, Takahiro: *See*—
Hasegawa, Katsumi; Kawabata, Takahiro; and Kuge, Shintaro, 4,394,986, Cl. 242-18.00R.

Kawakami, Hideaki: *See*—
Nagae, Yoshiharu; Kitajima, Masaaki; and Kawakami, Hideaki, 4,395,709, Cl. 340-784.000.

Kawamata, Motoo: *See*—
Toyoda, Toshihiro; Kawamata, Motoo; Osawa, Masanori; Itoh, Masayoshi; Mizutani, Kazumi; and Kono, Masahiro, 4,395,531, Cl. 528-49.000.

Kawamura, Fumio: *See*—
Asakura, Yamato; Suzuki, Teiji; and Kawamura, Fumio, 4,395,386, Cl. 423-249.000.

Kawamura, Katsuaki: *See*—
Takeda, Shigeki; Shibata, Junichi; Shimakata, Masashi; Oshime, Yasuhiro; Gomi, Shintaro; and Kawamura, Katsuaki, 4,395,714, Cl. 343-725.000.

Kawamura, Kenji: *See*—
Umezawa, Hamao; Takeuchi, Tomio; Aoyagi, Takaaki; Hachisu, Mitsugu; Kawamura, Kenji; Fukatsu, Shunzo; and Sekizawa, Yasuharu, 4,395,402, Cl. 424-177.000.

Kawasaki Jukogyo Kabushiki Kaisha: *See*—
Nakabayashi, Yasuyuki; Matsuura, Yoshio; Kurihara, Michio; Kamei, Takao; Nakamura, Akira; Komai, Keiichi; Shimotamari, Akira; and Wakabayashi, Takeshi, 4,395,334, Cl. 210-631.000.

Kawasaki, Masahiro; Okura, Zenichi; and Urano, Fumio, to Asahi Kogaku Kogyo Kabushiki Kaisha. Compensation for diaphragm control in SLR camera. 4,395,106, Cl. 354-271.000.

Kawasaki Seitetsu Kabushiki Kaisha: *See*—
Tomizawa, Fumio; Sobata, Katsutoshi; Yoshimatsu, Yoshiaki; Saito, Sadayuki; Otani, Takashi; and Hirano, Senzaburo, 4,395,023, Cl. 266-158.000.

Kayahara, Masao: *See*—
Yoda, Kenichi; Togawa, Hideo; Ogawa, Eizou; and Kayahara, Masao, 4,395,136, Cl. 368-156.000.

Kazakhsky Khimiko-Tekhnologichesky Institut: *See*—
Balakirev, Anatoly A.; and Balakirev, Boris A., 4,395,289, Cl. 106-98.000.

Keck, Donald B.: *See*—
Blankenship, Michael G.; and Keck, Donald B., 4,395,270, Cl. 65-3.120.

Keller, Alex J.; and Pinto, Akiva, to Automatic Material Handling, Inc. Fiber feeding apparatus with controlled air flow. 4,394,790, Cl. 19-105.000.

Kelley, Fred W., Jr., to General Electric Company. Regulating system employing an RMS composite controller. 4,395,674, Cl. 323-210.000.

Kelly, Michael G.: *See*—
Covill, James H.; Kelly, Michael G.; and Leahy, Thomas F., 4,395,566, Cl. 560-87.000.

Kent, William C., to Western Electric Company, Inc. Workpiece positioning, clamping and conveying apparatus. 4,395,028, Cl. 269-50.000.

Kern, John M., to Borg-Warner Corporation. Multi-speed transmission. 4,395,248, Cl. 474-24.000.

Kern, Werner; and Schnable, George L., to RCA Corporation. Selective etching of phosphosilicate glass. 4,395,304, Cl. 156-657.000.

Kerr-McGee Refining Corporation: *See*—
Welsh, Charles J., 4,395,385, Cl. 423-234.000.

Kettenring, Gunther, to Max-Planck-Gesellschaft zur Forderung. Electromagnetic diaphragm disk actuator. 4,395,650, Cl. 310-82.000.

Ketzler, John H. A.: *See*—
Van Brunt, Nicholas P.; and Ketzler, John H. A., 4,395,767, Cl. 371-25.000.

Keystone Bingo Products, Inc.: *See*—
Gargione, Frank, 4,395,043, Cl. 273-239.000.

Kienle, Erhard; Kornaker, Walter; and Greiner, Felix, to International Standard Electric Corporation. Apparatus for magnetizing a convergence device for in-line color-picture tubes and methods of adjusting convergence with such apparatus. 4,395,692, Cl. 335-284.000.

Kienzle, Wolfgang: *See*—
Sauer, Rudolf; Kienzle, Wolfgang; Paschke, Werner; and Hans, Waldemar, 4,394,973, Cl. 239-467.000.

Kikuchi, Yoshiki: *See*—
Murayama, Tomio; Kikuchi, Yoshiki; Moriguchi, Haruhiko; Ohmori, Takashi; and Moriguchi, Fujio, 4,395,718, Cl. 346-135.100.

Kildal, Maurice A.; and Hassall, Stephen J., to Eastman Kodak Company. Web cinching and winding apparatus and method. 4,394,990, Cl. 242-65.000.

Killat, George R., to Dow Chemical Company, The. Method for preparing fibrous mats from a fibrous suspension. 4,395,306, Cl. 162-156.000.

Killian, John C., Jr., to Polaroid Corporation. Detachable flash accessory for photographic apparatus. 4,395,748, Cl. 362-8.000.

King, Alan G., to Borg-Warner Limited. Tensioning devices. 4,395,250, Cl. 474-111.000.

King, Alan G.; and Hunt, Keith, to Borg-Warner Limited. Tensioning devices. 4,395,251, Cl. 474-111.000.

King, John M.: *See*—
de Vries, Louis; and King, John M., 4,395,343, Cl. 252-32.70E.

Kino, Yoshio: *See*—
Maeda, Masanori; Ishihara, Koji; and Kino, Yoshio, 4,395,617, Cl. 219-145.100.

Kinoshita, Koji, to Osaka Yuki Kagaku Kogyo Kabushiki Kaisha. Vulcanization accelerator for chloroprene rubber. 4,395,349, Cl. 252-182.000.

Kinsella, Patrick W.: *See*—
Lembeck, Manfred; Kinsella, Patrick W.; and Watson, Allan M., 4,395,355, Cl. 252-373.000.

Kirch, William, to Chemplex Company. Method of making and recovering olefin polymer particles. 4,395,523, Cl. 526-64.000.
Kishimoto, Juji; Sado, Ichiro; and Cho, Mitsuo, to Canon Kabushiki Kaisha. Input device for electronic apparatus. 4,395,704, Cl. 340-365.00S.
Kishimoto, Kazuo: *See*—
Iijima, Tokuzo; Samejima, Yasushi; Kishimoto, Kazuo; and Kono, Kimihiko, 4,395,321, Cl. 204-252.000.
Kitajima, Masaaki: *See*—
Nagae, Yoshiharu; Kitajima, Masaaki; and Kawakami, Hideaki, 4,395,709, Cl. 340-784.000.
Kitamoto, Tatsuji; and Shirahata, Ryuji, to Fuji Photo Film Co., Ltd. Method of manufacturing magnetic recording medium. 4,395,439, Cl. 427-132.000.
Klein, Max, to Klein, Max; and Crane, Frederick G., Jr. Adsorption and filtration mat for liquids. 4,395,332, Cl. 210-496.000.
Kleinewefers GmbH: *See*—
Pav, Josef; and Munch, Erhard, 4,394,793, Cl. 29-116.0AD.
Kleinhagen, Charles W., Jr., to Eaton Corporation. Automatic slack adjuster. 4,394,890, Cl. 188-71.900.
Kleist, Frederick D., to Allergan Pharmaceuticals, Inc. Method for cleaning contact lenses. 4,395,346, Cl. 252-135.000.
Klemarczyk, Philip T.; Sanders, James M.; Vock, Manfred H.; Vinals, Joaquin F.; Schmitt, Frederick L.; and Granda, Edward J., to International Flavors & Fragrances Inc. Carbomethoxy methyl norbornanes, organoleptic uses thereof and process for preparing same. 4,395,366, Cl. 252-545.000.
Klinger AG: *See*—
Wirz, Peter, 4,395,050, Cl. 277-236.000.
Klockner Ionon GmbH: *See*—
Rembges, Wolfgang; and Elwart, Jan G., 4,395,024, Cl. 266-252.000.
Kluttz, Robert Q.; and Slaugh, Lynn H., to Shell Oil Company. Alkylation process. 4,395,372, Cl. 260-465.00R.
Knabel, Walter: *See*—
D'Antonio, Nicholas F.; and Knabel, Walter, 4,395,759, Cl. 364-410.000.
Knapp, Alan G., to U.S. Philips Corporation. Method of forming a secondary emissive coating on a dynode. 4,395,437, Cl. 427-78.000.
Knauer, Wolfgang, to Hughes Aircraft Company. Beam deflection system. 4,395,691, Cl. 335-210.000.
Knechtli, Ronald C.; Loo, Robert Y.; and Kamath, G. Sanjiv, to Hughes Aircraft Company. Accelerated annealing of gallium arsenide solar cells. 4,395,293, Cl. 148-1.500.
Kobayashi, Masaaki; Igata, Kouichi; and Takeuchi, Akihiro, to Matsushita Electric Industrial Co., Ltd. Positionable element driving circuit. 4,395,741, Cl. 360-77.000.
Kobayashi, Masatsune; Matsumoto, Seiko; Haruta, Masahiro; and Ohta, Tokuya, to Canon Kabushiki Kaisha. Liquid recording material. 4,395,287, Cl. 106-20.000.
Kobayashi, Shunji: *See*—
Watanabe, Teruoki; Kanno, Tadao; Hidaka, Akio; and Kobayashi, Shunji, 4,395,025, Cl. 266-257.000.
Kobe Steel, Limited: *See*—
Nakata, Kazuo; Iochi, Akihiko; Kaise, Isamu; Takeuchi, Kazuo; and Nomura, Katsuhiko, 4,395,119, Cl. 356-73.000.
Koch, Albert P., to Nabisco Brands, Inc. Oven control apparatus. 4,395,232, Cl. 432-32.000.
Kocsisek, Karl: *See*—
Aarts, Petrus J. J.; Fleck, Harald; Kocsisek, Karl; and Schmidt, Ernst M., 4,395,745, Cl. 360-129.000.
Koda, Akihide: *See*—
Noda, Kanji; Nakagawa, Akira; Haraguchi, Yasushi; Ueda, Koichiro; Hirano, Munehiko; Nishioka, Itsuo; Yagi, Akira; Koda, Akihide; and Ide, Hiroyuki, 4,395,405, Cl. 424-180.000.
Kodama, Yutaka: *See*—
Saikawa, Isamu; Takano, Shuntaro; Imaizumi, Hiroyuki; Takakura, Isamu; Ochiai, Hirokazu; Yasuda, Takashi; Taki, Hideo; Tai, Masaru; and Kodama, Yutaka, 4,395,412, Cl. 424-246.000.
Koepnick, Paul J.: *See*—
Fischer, Harry A.; Koepnick, Paul J.; Dennis, Thomas A.; and Anderson, Joseph R., 4,395,427, Cl. 426-231.000.
Koga, Yoshihiro: *See*—
Murakami, Shozo; Isomura, Hukuyosi; and Koga, Yoshihiro, 4,395,283, Cl. 75-60.000.
Kohler, Henry G.; and Major, Emeric L., to Shutter Mart of California, Inc. Ratchet bearing for shutter slats and the like. 4,394,788, Cl. 16-334.000.
Kohno, Yasumasa: *See*—
Tanaka, Hiroto; Kohno, Yasumasa; Tanaka, Hideyuki; and Sasaki, Kotaro, 4,395,746, Cl. 361-143.000.
Kohyama, Susumu: *See*—
Nagakubo, Yoshihide; and Kohyama, Susumu, 4,395,433, Cl. 427-35.000.
Koiso, Junichi: *See*—
Ura, Hiroaki; Hirabayashi, Tsugio; and Koiso, Junichi, 4,395,114, Cl. 355-15.000.
Kojima, Yoshikazu: *See*—
Namiki, Masayuki; Kamiya, Masaaki; Kojima, Yoshikazu; and Tanaka, Kojiro, 4,395,139, Cl. 374-178.000.
Kokosi, Jozsef: *See*—
Hermecz, Istvan; Kokosi, Jozsef; Horvath, Agnes; Meszaros, Zoltan; Szasz, Gyorgy; Breining, Tibor; and Vasvari nee Debreczy, Lelle, 4,395,549, Cl. 544-252.000.
Komai, Keiichi: *See*—
Nakabayashi, Yasuyuki; Matsuura, Yoshio; Kurihara, Michio; Kamei, Takao; Nakamura, Akira; Komai, Keiichi; Shimotamari, Akira; and Wakabayashi, Takeshi, 4,395,334, Cl. 210-631.000.
Komatsu, Fumito. Motors. 4,395,668, Cl. 318-439.000.
Komori, Shigehiro; and Yamaguchi, Masaru, to Canon Kabushiki Kaisha. Copying apparatus. 4,395,118, Cl. 355-75.000.
Kondo, Hideyo; and Fujimura, Naoto, to Canon Kabushiki Kaisha. Electrophotographic photosensitive member with cured cyclized rubber binder. 4,395,474, Cl. 430-67.000.
Kondo, Isao, to Olympus Optical Company Ltd. Illumination mode switching circuit for automatic electronic flash. 4,395,100, Cl. 354-33.000.
Kondo, Shiro; and Takii, Yasuo, to Alps Electric Co., Ltd. Illuminated push-button switch. 4,395,611, Cl. 200-314.000.
Kondo, Toshio: *See*—
Kanda, Hiroshi; Ishikawa, Isao; Kondo, Toshio; and Katakura, Kageyoshi, 4,394,824, Cl. 73-606.000.
Kondo, Yoshikazu; Yamamoto, Toshihiro; and Yamamoto, Takaji, to Kanebo, Ltd.; and Kanebo Synthetic Fibers, Ltd. Porous acrylic synthetic fibers comprising cellulose acetate in an acrylic matrix and method for producing said fibers. 4,395,377, Cl. 264-46.100.
Konig, Wolfgang; Geiger, Rolf; and Sandow, Jurgen K., to Hoechst Aktiengesellschaft. Nonapeptide, a process for its preparation, an agent containing it and its use. 4,395,400, Cl. 424-177.000.
Konishiroku Photo Industry Co., Ltd.: *See*—
Ura, Hiroaki; Hirabayashi, Tsugio; and Koiso, Junichi, 4,395,114, Cl. 355-15.000.
Kono, Kimihiko: *See*—
Iijima, Tokuzo; Samejima, Yasushi; Kishimoto, Kazuo; and Kono, Kimihiko, 4,395,321, Cl. 204-252.000.
Kono, Masahiro: *See*—
Toyoda, Toshihiro; Kawamata, Motoo; Osawa, Masanori; Itoh, Masayoshi; Mizutani, Kazumi; and Kono, Masahiro, 4,395,531, Cl. 528-49.000.
Kono, Motomichi: *See*—
Kasai, Masaji; Shirahata, Kunikatsu; and Kono, Motomichi, 4,395,558, Cl. 548-422.000.
Konrad, Eugen; and Mager, Herbert, to Wella Aktiengesellschaft. Hair dyeing agent. 4,395,262, Cl. 8-410.000.
Kopke, Wolfgang; Muller, Manfred; Schmidt, Wolfgang; Eggert, Albert; Gahleitner, Erwin; and Raupach, Gerhard, to Robert Bosch GmbH. Modular hearing aid. 4,395,601, Cl. 179-179.000.
Koppers Company, Inc.: *See*—
Lahner, William F., III, 4,395,047, Cl. 277-3.000.
Kopse, Odon; and Amaya, Nestor R., to Robert Bosch GmbH. Electrical signal generating fuel injection valve. 4,394,823, Cl. 73-119.00A.
Kornaker, Walter: *See*—
Kienle, Erhard; Kornaker, Walter; and Greiner, Felix, 4,395,692, Cl. 335-284.000.
Korpinen, Matti: *See*—
Manttari, Erkki; and Korpinen, Matti, 4,395,207, Cl. 418-102.000.
Korpman, Ralf, to Johnson & Johnson. Absorbent foam products. 4,394,930, Cl. 220-444.000.
Koshimura, Yasunobu: *See*—
Aoike, Nanjou; Inui, Kenichi; and Koshimura, Yasunobu, 4,395,659, Cl. 315-209.00R.
Kosmahl, Henry G., to United States of America, National Aeronautics and Space Administration. Gyrotron transmitting tube. 4,395,656, Cl. 315-4.000.
Kosoczky, Ibolya: *See*—
Budai, Zoltan; Lay nee Konya, Aranka; Mezei, Tibor; Petocz, Lujza; Grasser, Katalin; Kosoczky, Ibolya; Szirt nee Kiszelly, Eniko; and Gorog, Peter, 4,395,413, Cl. 424-250.000.
Kousaka, Akira: *See*—
Tada, Isao; Okamura, Toshio; Kousaka, Akira; and Nakai, Kaichiro, 4,395,657, Cl. 315-39.710.
Kovacic, Guido: *See*—
Luhrig, Hermann; Hoffacker, Franz; Kovacic, Guido; Engelsmann, Dieter; Zobel, Siegfried; Hackenberg, Hubert; and Wagner, Karl, 4,395,107, Cl. 354-275.000.
Kraft, Wayne R.: *See*—
Cases, Moises; Kraft, Wayne R.; Moore, Victor S.; Stahl, William L., Jr.; and Thoma, Nandor G., 4,395,646, Cl. 307-468.000.
Kramer, Carl. Apparatus for floatingly moving a length of material. 4,394,950, Cl. 226-97.000.
Kramer, Donald L., to Miles Laboratories, Inc. Apparatus for reflectance measurement of fluorescent radiation and composite useful therein. 4,395,126, Cl. 356-417.000.
Kramer, Lee F.: *See*—
Christensen, Robert B.; and Kramer, Lee F., 4,395,193, Cl. 414-722.000.
Kramer, Walter; and Follmann, Rainer, to Mars Inc. Calcium silicate granules forming a microporous structure. 4,395,357, Cl. 252-428.000.
Kray, William D., to General Electric Company. Article comprising silicone resin coated, methacrylate-primed substrate. 4,395,463, Cl. 428-447.000.
Krenz, Horst M., to Zenith Radio Corporation. Print head drive belt tensioning means and method for line printer. 4,395,151, Cl. 400-320.000.
Kretztechnik Gesellschaft m.b.H.: *See*—
Satrapa, Jaroslav, 4,395,707, Cl. 340-703.000.
Krol, Thijs: *See*—
Goethals, Jean M. E. B.; and Krol, Thijs, 4,395,768, Cl. 371-45.000.

Kronich, Peter G.; and Arendt, Dan R., to Tecumseh Products Company. Engine shut-off system with flywheel braking. 4,394,893, Cl. 192-1.000.

Krull, Klaus: *See*—
Gohm, Lothar; and Krull, Klaus, 4,395,780, Cl. 455-607.000.

Krupp Polysius AG: *See*—
Beltrop, Herbert; Teutenberg, Josef; and Hilbig, Manfred, 4,395,164, Cl. 406-74.000.

Kruse, Richard H.: *See*—
Barker, Thomas H.; Roach, Thomas L.; Kruse, Richard H.; Fayer, Jay A.; and Bohlman, Eric O., 4,395,627, Cl. 235-381.000.

Kubasov, Vladimir L.: *See*—
Golubkov, Sergei V.; Druzhinin, Ernest A.; Zimin, Vladimir M.; Kubasov, Vladimir L.; Lvovich, Florenty I.; and Mazanko, Anatoly F., 4,395,314, Cl. 204-98.000.

Kubo, Seitoku; Kuramochi, Koujiro; and Kyushima, Tatsuo, to Toyota Jidosha Kogyo Kabushiki Kaisha. Transmission control system with modified friction engaging mechanism actuating pressure. 4,394,827, Cl. 74-868.000.

Kubota, Yoshihiro; and Kuriyama, Osamu, to Shin-Etsu Chemical Co., Ltd. Polyphenylenesulfide resin composition. 4,395,512, Cl. 524-413.000.

Kuge, Shintaro: *See*—
Hasegawa, Katsumi; Kawabata, Takahiro; and Kuge, Shintaro, 4,394,986, Cl. 242-18.00R.

Kuhn, Eberhard: *See*—
Ahne, Hellmut; Kuhn, Eberhard; and Rubner, Roland, 4,395,482, Cl. 430-326.000.

Kulkarni, Ravindra D.; Kanner, Bernard; and Goddard, Errol D., to Union Carbide Corporation. High efficiency antifoam compositions and process for reducing foaming. 4,395,352, Cl. 252-321.000.

Kumagai, Katuya: *See*—
Sanpei, Hideo; Matsuno, Kunio; Hirano, Shyoji; and Kumagai, Katuya, 4,395,435, Cl. 427-38.000.

Kumaki, Takashi: *See*—
Saito, Takashi; Hirano, Toshio; and Kumaki, Takashi, 4,395,744, Cl. 360-97.000.

Kunimoto, Go; Ichinose, Isao; Suzuki, Noboru; and Mori, Fumio, to Toyo Seikan Kaisha, Ltd. Peelable adhesive structure. 4,395,446, Cl. 428-35.000.

Kunkle, Gerald E.; Sensi, John E.; and Gulotta, Joseph A., to PPG Industries, Inc. Pressure sizing of float glass. 4,395,272, Cl. 65-99.500.

Kuramochi, Koujiro: *See*—
Kubo, Seitoku; Kuramochi, Koujiro; and Kyushima, Tatsuo, 4,394,827, Cl. 74-868.000.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See*—
Satoh, Hiroaki; and Hiruta, Masaru, 4,395,362, Cl. 252-511.000.

Kurihara, Michio: *See*—
Nakabayashi, Yasuyuki; Matsuura, Yoshio; Kurihara, Michio; Kamei, Takao; Nakamura, Akira; Komai, Keiichi; Shimotamari, Akira; and Wakabayashi, Takeshi, 4,395,334, Cl. 210-631.000.

Kuriyama, Osamu: *See*—
Kubota, Yoshihiro; and Kuriyama, Osamu, 4,395,512, Cl. 524-413.000.

Kurz, Wolfgang, to Robert Bosch GmbH. Controlled rectifier motor vehicle battery charger. 4,395,673, Cl. 320-61.000.

Kutowy, Oleh. Interconnected pumping mechanism. 4,395,130, Cl. 366-137.000.

Kuzmin, Alexei V.: *See*—
Bazarov, Vladimir G.; Kuzmin, Alexei V.; Smaga, Gennady A.; Kapchits, Zelik F.; Dennikov, Sergei J.; and Soosalu, Peter I., 4,395,228, Cl. 431-168.000.

Kvasnikoff, Georges: *See*—
Desgrandchamps, Guy; Kvasnikoff, Georges; and Blanc, Claude, 4,395,390, Cl. 423-573.00G.

Kwantes, Arien; and De Goederen, Cornelis W. J., to Shell Oil Company. Process for the preparation of ethanol. 4,395,576, Cl. 568-913.000.

Kyowa Hakko Kogyo Kabushiki Kaisha: *See*—
Kasai, Masaji; Shirahata, Kunikatsu; and Kono, Motomichi, 4,395,558, Cl. 548-422.000.

Kyushima, Tatsuo: *See*—
Kubo, Seitoku; Kuramochi, Koujiro; and Kyushima, Tatsuo, 4,394,827, Cl. 74-868.000.

Lackey, Stanley A., Jr.: *See*—
Helenius, Allan; Lackey, Stanley A., Jr.; and Northrup, Thomas A., 4,395,758, Cl. 364-200.000.

Lacour, Alain P.: *See*—
Langlois, Michel; Bucher, Bernard P.; Dostert, Philippe L.; Lacour, Alain P.; and Moinet, Gerard H., 4,395,416, Cl. 424-267.000.

Lahner, William F., III, to Koppers Company, Inc. Shaft seal with seal impeller for materials processing machinery. 4,395,047, Cl. 277-3.000.

Lahti, Pertti: *See*—
Kantojarvi, Jouni; Lahti, Pertti; and Lindholm, Veikko, 4,395,002, Cl. 244-136.000.

Laird, William B. Furniture with removable cushions. 4,395,071, Cl. 297-440.000.

Laland, Soren: *See*—
Gacek, Mikkel J.; Oftebro, Reidar; Laland, Soren; and Undheim, Kjell, 4,395,406, Cl. 424-180.000.

Lambert, Neville L.: *See*—
Hoener, Dieter W.; Lambert, Neville L.; and Schweizer, Erwin V., 4,395,172, Cl. 410-84.000.

Lambertus, Friedrich, to Werner & Pfleiderer. Screen-change device for extruders. 4,395,212, Cl. 425-185.000.

Lampton, Michael L.: *See*—
Anger, Hal O.; Martin, Donn C.; and Lampton, Michael L., 4,395,636, Cl. 250-366.000.

Lance, David G.; and Skinner, Raymond N., to Carlton and United Breweries Limited. Processing of hop resins and similar materials. 4,395,431, Cl. 426-600.000.

Landskrona Finans AB: *See*—
Clevenholm, Roy L. R.; and Mellqvist, Carl-Olof H., 4,395,133, Cl. 366-241.000.

Lang, Gerard: *See*—
Jacquet, Bernard; Lang, Gerard; Malaval, Alain; Forestier, Serge; and Le Trung, Do, 4,395,541, Cl. 528-367.000.

Lange, Karl-Heinz, to Balda-Werke Photographische Gerate und Kunststoff GmbH & Co., KG. Electrically programmed shutter assembly. 4,395,104, Cl. 354-230.000.

Lange, Walter J.: *See*—
Leitman, Harold N.; and Lange, Walter J., 4,395,596, Cl. 179-99.0LC.

Langenegger, Georg; Bauer, Franz; and Langenegger, Josef. Unit for the administration of liquids to animals, more specially a watering bowl. 4,394,847, Cl. 119-75.000.

Langenegger, Josef: *See*—
Langenegger, Georg; Bauer, Franz; and Langenegger, Josef, 4,394,847, Cl. 119-75.000.

Langlais, Jacques F.: *See*—
Dauge, Gilbert V.; Langlais, Jacques F.; and Quehen, Daniel J., 4,394,885, Cl. 177-210.00C.

Langlois, Michel; Bucher, Bernard P.; Dostert, Philippe L.; Lacour, Alain P.; and Moinet, Gerard H., to Delalande S.A. 1-Spiro isobenzofuranic and 1-spiro isobenzothiophenic derivatives the process for preparing the same and their use in therapeutics. 4,395,416, Cl. 424-267.000.

Lanning, John M.; and Epps, Stephan R., to Harnischfeger Corporation. Crane having power operated outriggers and lock means therefor. 4,394,913, Cl. 212-189.000.

Lanyi, Gyorgy: *See*—
Molnar, Attila; Csermely, Gyorgy; and Lanyi, Gyorgy, 4,395,568, Cl. 560-198.000.

Lanz, Andres: *See*—
Weil, Wolfgang; Lanz, Andres; Vogt, Max; Meier, Paul; Kaul, Martin; and Fankhauser, Hanspeter, 4,395,614, Cl. 219-72.000.

LaPelle, Ronald J.: *See*—
Ou, Sam A.; and LaPelle, Ronald J., 4,394,926, Cl. 220-89.00A.

Lapham, Edward L. Portable, reusable pipe coupling. 4,395,060, Cl. 285-39.000.

Lappe, Manfred: *See*—
Rathje, Uwe; and Lappe, Manfred, 4,394,886, Cl. 180-140.000.

Larimore, Franklin C., to Minnesota Mining and Manufacturing Company. Peripherally supported package for adhesive-surfaced articles. 4,394,904, Cl. 206-447.000.

Larkin, John M., to Texaco, Inc. Oligomerization of olefins over boron trifluoride in the presence of a transition metal cation-containing promoter. 4,395,578, Cl. 585-10.000.

La Sala, Joseph: *See*—
Lindsay, James H.; La Sala, Joseph; and Ghorashi, Hamid M., 4,395,313, Cl. 204-30.000.

Latsch, Reinhard; Linder, Ernst; Maurer, Helmut; Muller, Klaus; and Rieger, Franz, to Robert Bosch GmbH. Internal combustion engine with externally supplied ignition having an ignition chamber associated with the main combustion chamber. 4,394,855, Cl. 123-254.000.

Lauterbach, Christl, to Siemens Aktiengesellschaft. Barrier-free, low-resistant electrical contact on III-V semiconductor material. 4,395,727, Cl. 357-71.000.

Lauzier, Rene, to Angenieux-Clb S.A. Rear "stop" light contactor for a vehicle such as a motorcycle or motor bicycle. 4,395,603, Cl. 200-61.870.

Lavorzaione Materie Plastiche L.M.P. S.p.A.: *See*—
Benadi', Alberto, 4,395,217, Cl. 425-382.00R.

Lay nee Konya, Aranka: *See*—
Budai, Zoltan; Lay nee Konya, Aranka; Mezei, Tibor; Petocz, Lujza; Grasser, Katalin; Kosoczky, Ibolya; Szirt nee Kiszelly, Eniko; and Gorog, Peter, 4,395,413, Cl. 424-250.000.

Lazerson, Max M.: *See*—
Bohme, Rolf C.; and Lazerson, Max M., 4,394,907, Cl. 209-556.000.

Leahy, Thomas F.: *See*—
Covill, James H.; Kelly, Michael G.; and Leahy, Thomas F., 4,395,566, Cl. 560-87.000.

Lebesnerais, Gerard: *See*—
Hornung, Robert; and Lebesnerais, Gerard, 4,395,681, Cl. 330-259.000.

Lebret, Gerard, to E. P. Remy et Cie. Pincers-type gripper for seizing objects and gripping head equipped with such grippers. 4,395,069, Cl. 294-87.220.

Lee, Wai M., to EKC Technology, Inc. Photoresist stripping composition and method. 4,395,348, Cl. 252-143.000.

Lefevre, Marcel R.; and DePalma, Anthony M., to Research-Cottrell, Inc. Filling sheet attaching means for gas and liquid contact apparatus and method of assembly of plural parallel filling sheets. 4,395,448, Cl. 428-99.000.

Lehmacher, Hans. Apparatus for making bags of thin synthetic-resin film. 4,395,252, Cl. 493-28.000.

Lehmann, Klaus, to Robert Bosch GmbH. Broadband circuit with rapidly variable resistor. 4,395,643, Cl. 307-264.000.

Lehmann, Richard W.: *See*—
Chowdhury, Ajit K.; Bauer, Gerald L.; and Lehmann, Richard W., 4,395,339, Cl. 210-761.000.

Leiner, Howard H.; and Bossert, Emily C., to M&T Chemicals Inc. Catalyst composition and curable polymer compositions containing same. 4,395,528, Cl. 528-45.000.

Leitman, Harold N.; and Lange, Walter J. Multi-line controller. 4,395,596, Cl. 179-99.0LC.

Lembeck, Manfred; Kinsella, Patrick W.; and Watson, Allan M., to Linde Aktiengesellschaft. Process and apparatus for treating a pressurized feed stream capable of undergoing an endothermic reaction. 4,395,355, Cl. 252-373.000.

Le Page, Jean-Francois; Billon, Alain; and Jacquin, Yves, to Societe Francaise des Produits pour Catalyse. Catalyst and process for hydrorefining hydrocarbon charges with high contents of metals, resins and/or asphaltenes. 4,395,329, Cl. 208-251.00H.

Lesage, Philippe M., to Societe Audax. Electro-acoustic transducer causing sound waves to be in phase at any point by preventing reflection from the back end of the diaphragm to stress applying means. 4,395,598, Cl. 179-115.50R.

Le Trung, Do: *See*—
Jacquet, Bernard; Lang, Gerard; Malaval, Alain; Forestier, Serge; and Le Trung, Do, 4,395,541, Cl. 528-367.000.

Leupold & Stevens, Inc.: *See*—
Gibson, Dale E., 4,395,096, Cl. 350-560.000.

Leutner, Bernd; Purucker, Berndhard; Rother, Eberhard; Juergens, Geerd F.; and Wagner, Dieter, to BASF Aktiengesellschaft. Preparation of multi-trace element fertilizers. 4,395,273, Cl. 71-11.000.

Lever Brothers Company: *See*—
Walz, Kurt; Dittmann, Peter; and Hohne, Hartmut, 4,395,345, Cl. 252-135.000.

Levine, Richard S.: *See*—
Soski, Norbert S.; and Levine, Richard S., 4,395,760, Cl. 364-410.000.

Levy, Jerome F.: *See*—
Lewis, Sheldon N.; and Levy, Jerome F., 4,395,569, Cl. 560-222.000.

Lewis, Henry G., Jr., to RCA Corporation. Digital video signal processing filters with signal-to-noise enhancement. 4,395,729, Cl. 358-21.00R.

Lewis, Sheldon N.; and Levy, Jerome F., to Rohm and Haas Company. Method of preparing sulfonic acid salts of acyloxyalkylamines and polymers and compounds therefrom. 4,395,569, Cl. 560-222.000.

Leybold Heraeus GmbH: *See*—
Ross, Rudi; and Heimel, Helmut, 4,395,632, Cl. 250-343.000.

Li, Chou H. Temperature controlled apparatus. 4,395,728, Cl. 357-82.000.

Licciardello, Michael: *See*—
Boden, Richard M.; Tyszkiewicz, Theodore J.; and Licciardello, Michael, 4,395,370, Cl. 260-463.000.

Licentia Patent-Verwaltungs-GmbH: *See*—
Gohm, Lothar; and Krull, Klaus, 4,395,780, Cl. 455-607.000.

Lieberman, Sidney, to Dorma Door Controls Inc. Hydraulic door closer construction. 4,394,787, Cl. 16-58.000.

Liechti, Peter: *See*—
Haase, Jeroslav; Liechti, Peter; Wegmuller, Hans; Wurster, Rudolf F.; and Bowes, Quentin, 4,395,546, Cl. 544-168.000.

Lifel di Torta E C. S.A.S.: *See*—
Torta, Mario, 4,395,011, Cl. 248-393.000.

Liller, Paul R.; and Shahan, Donald J., to RCA Corporation. Method of electrically processing a CRT mount assembly to reduce afterglow. 4,395,242, Cl. 445-5.000.

Limare, Armand; Razumowski, Bernard; and Sindezingue, Claude, to Societe Anonyme Societe Miniere et Metallurgique de Penarroya. Process for making non-dusting high lead oxide-low silica additive. 4,395,291, Cl. 106-297.000.

Linde Aktiengesellschaft: *See*—
Lembeck, Manfred; Kinsella, Patrick W.; and Watson, Allan M., 4,395,355, Cl. 252-373.000.

Linder, Ernst: *See*—
Latsch, Reinhard; Linder, Ernst; Maurer, Helmut; Muller, Klaus; and Rieger, Franz, 4,394,855, Cl. 123-254.000.

Lindholm, Veikko: *See*—
Kantojarvi, Jouni; Lahti, Pertti; and Lindholm, Veikko, 4,395,002, Cl. 244-136.000.

Lindholm, Wayne R.: *See*—
Eskuchen, Frank G., 4,395,030, Cl. 269-181.000.

Lindner, Christian: *See*—
Waniczek, Helmut; Suling, Carlhans; Lindner, Christian; and Bartl, Herbert, 4,395,517, Cl. 525-168.000.

Lindsay, James H.; La Sala, Joseph; and Ghorashi, Hamid M., to General Motors Corporation. Vacuum pretreatment process for durable electroplated coatings on ABS and PPO plastics. 4,395,313, Cl. 204-30.000.

Line S.A.: *See*—
Pinchemaille, Pierre, 4,394,908, Cl. 211-1.500.

Lines, Ellwood L., Jr.; and Farmer, Douglas A., Jr., to Olin Corporation. Fire and heat resistant structure. 4,395,453, Cl. 428-216.000.

Lipani, Anthony F.: *See*—
Crean, Peter A.; Schneider, John M.; and Lipani, Anthony F., 4,395,716, Cl. 346-1.100.

Lippincott, Douglas E.: *See*—
Patton, Charles R., III; and Lippincott, Douglas E., 4,395,116, Cl. 355-32.000.

Lisiecki, Robert E., to Ex-Cell-O Corporation. Container and blank for constructing same. 4,394,954, Cl. 229-17.00G.

List, Hans: *See*—
Greier, Josef; and Pomfret, Colin T., 4,394,851, Cl. 123-182.000.

Litton Systems, Inc.: *See*—
Loomer, Weston R., 4,395,181, Cl. 414-284.000.

Lloyd, Randahl B., to Hughes Aircraft Company. Sampling and level shifting apparatus to operate in conjunction with a liquid crystal display for converting DC analog drive signals to AC signals. 4,395,708, Cl. 340-784.000.

Lobeck, John H., to Torrington Company, The. Self-adjusting angular contact spherical bearing. 4,395,142, Cl. 384-192.000.

Lockheed Corporation: *See*—
deJong, Sijtze, 4,395,160, Cl. 405-195.000.

Loctite Corporation: *See*—
Taylor, James H., Jr., 4,394,945, Cl. 222-571.000.

Login, Robert B.; and Berke, Robert L., to Jordan Chemical Company. Phosphated amine oxides. 4,395,373, Cl. 260-928.000.

Lohr, Gernot; and Reinecke, Rolf, to Hoechst Aktiengesellschaft. Protective colloid-free plastics dispersion having a bimodal particle size distribution. 4,395,500, Cl. 523-221.000.

Longrod, Scott J., to SCM Corporation. Ribbon drive mechanism. 4,395,149, Cl. 400-215.000.

Loo, Robert Y.: *See*—
Knechtli, Ronald C.; Loo, Robert Y.; and Kamath, G. Sanjiv, 4,395,293, Cl. 148-1.500.

Loomer, Weston R., to Litton Systems, Inc. Robot vehicle. 4,395,181, Cl. 414-284.000.

Loos, Michel: *See*—
Comfort, Joseph A.; Perry, Thomas J.; and Loos, Michel, 4,395,753, Cl. 364-200.000.

Looser, Christian, to Alcan International Limited. Sealed closure-container package. 4,394,917, Cl. 215-232.000.

Lopato, Georgy P.: *See*—
Sidorenko, Georgy I.; Stankevich, Vladimar I.; Katsygin, Vitaly V.; and Lopato, Georgy P., 4,394,865, Cl. 128-782.000.

Lopez-Crevillen, Jose M.; and Huber, John W., to General Motors Corporation. Engine oil pan isolation mounting. 4,394,853, Cl. 123-195.00C.

Lougheed, Robert M.: *See*—
Dargel, William O.; Lougheed, Robert M.; McCubbrey, David L.; and Richardson, Ralph E., 4,395,697, Cl. 382-41.000.
Sternberg, Stanley R.; Dargel, William O.; Lougheed, Robert M.; McCubbrey, David L.; and Richardson, Ralph E., 4,395,698, Cl. 382-27.000.

Low, Teresa L. K.; and Goldstein, Allan L., to George Washington University. Synthetic thymosin β_3 and β_4 analogues. 4,395,404, Cl. 424-177.000.

Lowe, Richard D. Can crusher. 4,394,834, Cl. 100-245.000.

Lucas, Gary M.: *See*—
White, Mary A.; Beers, Melvin D.; Lucas, Gary M.; Smith, Robert A.; and Swiger, Roger T., 4,395,526, Cl. 528-18.000.

Lucas Industries Limited: *See*—
Gaskell, David J., 4,394,971, Cl. 239-453.000.

Lucas Industries PLC: *See*—
Potter, James C., 4,394,972, Cl. 239-453.000.

Lucatorto, Thomas B.: *See*—
Roberts, James R.; McIlrath, Thomas J.; and Lucatorto, Thomas B., 4,395,775, Cl. 378-145.000.

Luce, Nunzio A. Joystick switch for timepieces. 4,395,134, Cl. 368-3.000.

Luhrig, Hermann; Hoffacker, Franz; Kovacic, Guido; Engelsmann, Dieter; Zobel, Siegfried; Hackenberg, Hubert; and Wagner, Karl, to Agfa-Gevaert AG. Film cassette. 4,395,107, Cl. 354-275.000.

Luk Lamellen und Kupplungsbau GmbH: *See*—
Huber, Lothar, 4,394,854, Cl. 123-198.00F.

Lundback, Per B. Vessel for recovering material. 4,394,841, Cl. 114-26.000.

Lundy, Rene R.; and Tyler, David L. Auditory subliminal message system and method. 4,395,600, Cl. 179-1.50M.

Lutz, Charles W., to FMC Corporation. Vapor hydrogen peroxide bleach delivery. 4,395,261, Cl. 8-111.000.

Luu, Duc: *See*—
Bienvenu, Jacques; Carre, Claude; Luu, Duc; and Verdier, Henri, 4,395,757, Cl. 364-200.000.

Lvovich, Florenty I.: *See*—
Golubkov, Sergei V.; Druzhinin, Ernest A.; Zimin, Vladimir M.; Kubasov, Vladimir L.; Lvovich, Florenty I.; and Mazanko, Anatoly F., 4,395,314, Cl. 204-98.000.

M & T Chemicals Inc.: *See*—
Berger, Ade, 4,395,527, Cl. 528-26.000.
Leiner, Howard H.; and Bossert, Emily C., 4,395,528, Cl. 528-45.000.

Ma, Chi: *See*—
Sulzberg, Theodore; and Ma, Chi, 4,395,504, Cl. 524-14.000.

MacDonell, Wayne O.; Graves, Donald L.; and Timar, Thomas, to Boeing Company, The. Transfer system for use between platforms having relative motion between one another. 4,395,178, Cl. 414-138.000.

MacPhee, John; Wirth, David; and St. John, John, to Baldwin-Gegenheimer Corporation. System for mixing concentrate and water to form fountain solution for offset printing presses. 4,394,870, Cl. 137-99.000.

Maddox, Lodric L., to Clorox Company, The. Drain opener composition. 4,395,344, Cl. 252-99.000.

Maeda, Masanori; Ishihara, Koji; and Kino, Yoshio, to Matsushita Electric Industrial Co., Ltd. Successively joinable carbon electrode for gouging metals. 4,395,617, Cl. 219-145.100.

Maeda, Tetsuo: *See*—
Yokobori, Nobuyoshi; Maeda, Tetsuo; and Igarashi, Yoshiaki, 4,395,682, Cl. 330-260.000.

Maeguchi, Kenji, to Tokyo Shibaura Denki Kabushiki Kaisha. Semiconductor device of silicon on sapphire structure having FETs with different thickness polycrystalline silicon films. 4,395,726, Cl. 357-41.000.

Mager, Herbert: *See*—
Konrad, Eugen; and Mager, Herbert, 4,395,262, Cl. 8-410.000.

Magno, Robert: *See*—
Janssen, Donovan M.; Magno, Robert; Seaward, William S.; and Valent, James A., 4,395,033, Cl. 271-10.000.

Magnotte, John A., to Westmont Industries. Engine unit maintenance complex. 4,395,180, Cl. 414-282.000.

Magrath Company, The: *See*—
Andrews, James S.; and Hierath, Leonard L., 4,394,956, Cl. 231-2.00E.

Mahlein, Hans F., to Siemens Aktiengesellschaft. Optical cut-off filter. 4,395,090, Cl. 350-166.000.

Majewski, Henry A.; Salmre, William; and Van Brimer, R. Hugh, to Exxon Research and Engineering Co. Ink jet apparatus with a flexible piezoelectric member and method of operating same. 4,395,719, Cl. 346-140.00R.

Major, Emeric L.: *See*—
Kohler, Henry G.; and Major, Emeric L., 4,394,788, Cl. 16-334.000.

Makita, Satoru: *See*—
Hattori, Takashi; and Makita, Satoru, 4,395,654, Cl. 313-496.000.

Malaval, Alain: *See*—
Jacquet, Bernard; Lang, Gerard; Malaval, Alain; Forestier, Serge; and Le Trung, Do, 4,395,541, Cl. 528-367.000.

Malkova, Veronika P.: *See*—
Ovchinnikov, Jury A.; Ivanov, Vadim T.; Rostovtseva, Larisa I.; Andronova, Tatyana M.; Sorokina, Irina B.; and Malkova, Veronika P., 4,395,399, Cl. 424-177.000.

Manella, Paul, to Doltron AG. Separating vessel and a separating centrifuge for use in the centrifugal separation of a liquid. 4,395,257, Cl. 494-47.000.

Mank, Larry: *See*—
Auboir, Pierre; Bonnefond, Pierre; and Mank, Larry, 4,395,330, Cl. 208-309.000.

Manktelow, Gerald; and Wolff, Kenneth T., to Data General Corporation. Circuit and method of linearity correction for CRT deflection circuits. 4,395,663, Cl. 315-403.000.

Mannesmann Aktiengesellschaft: *See*—
Gruner, Manfred; and Hendrischk, Wolfgang, 4,395,148, Cl. 400-212.000.
Hendrischk, Wolfgang, 4,395,152, Cl. 400-569.000.

Mansfield, Gerald R.: *See*—
Beall, George H.; Mansfield, Gerald R.; and Schreurs, Jan W. H., 4,395,271, Cl. 65-31.000.

Manttari, Erkki; and Korpinen, Matti, to Valmet Oy. Gear pump or motor with bearing passage for shaft lubrication. 4,395,207, Cl. 418-102.000.

Mappes, Celia J.: *See*—
Hagen, Helmut; Ziegler, Hans; Mappes, Celia J.; and Pommer, Ernst-Heinrich, 4,395,415, Cl. 424-263.000.

Marconi Company Limited, The: *See*—
Firth, Kenneth; and Howard, Richard K., 4,395,088, Cl. 350-3.700.

Marinescu, Marlene, to Teldix GmbH. Electrical winding for a transformer, a choke coil or the like. 4,395,693, Cl. 336-223.000.

Mark Levinson Audio Systems Ltd.: *See*—
Colangelo, Thomas P., 4,395,592, Cl. 179-115.00V.

Marker-Patentverwertungsgesellschaft GmbH: *See*—
D'Antonio, Nicholas F.; and Knabel, Walter, 4,395,759, Cl. 364-410.000.

Marko Materials, Inc.: *See*—
Panchanathan, Viswanathan; Ray, Ranjan; and Giessen, Bill C., 4,395,464, Cl. 428-546.000.

Marks, Alvin M. Electrothermodynamic (ETD) power converter. 4,395,648, Cl. 310-10.000.

Mars Inc.: *See*—
Kramer, Walter; and Follmann, Rainer, 4,395,357, Cl. 252-428.000.

Marsh, Edward K., to Bendix Corporation, The. Electrical contact for electrical connector assembly. 4,395,086, Cl. 339-176.00M.

Martelli, Gian N.: *See*—
Bianchi, Giuseppe; Nidola, Antonio; and Martelli, Gian N., 4,395,436, Cl. 427-53.100.

Martin, Donn C.: *See*—
Anger, Hal O.; Martin, Donn C.; and Lampton, Michael L., 4,395,636, Cl. 250-366.000.

Martin, Richard L.: *See*—
Tait, William S.; Martin, Richard L.; and Rodgers, Richard A., 4,395,318, Cl. 204-404.000.

Maruyama, Teruo; Taguchi, Tatsuhisa; and Onoda, Tadayuki, to Matsushita Electric Industrial Co., Ltd. Rotary vane compressor with wedge-like clearance between rotor and cylinder. 4,395,208, Cl. 418-102.000.

Marz, Dieter; Schmitt, Philipp; and Weidenhammer, Peter, to Draiswerke GmbH. Device for the simultaneous and continuous feeding of pulverulent solids and of liquids into treatment machines. 4,394,980, Cl. 241-46.020.

Masaki, Hisaji: *See*—
Takahashi, Yuji; and Masaki, Hisaji, 4,395,111, Cl. 355-14.00R.

Masco Corporation: *See*—
Weir, Charles R., 4,395,303, Cl. 156-656.000.

Massachusetts Institute of Technology: *See*—
Cooney, Charles L.; and Schaefer, Eugene J., 4,395,490, Cl. 435-201.000.
Wang, Daniel I. C.; and Avgerinos, George C., 4,395,543, Cl. 536-56.000.

Maternus, Fred, to National Carbide Tool, Inc. Router especially for use as a fiber-metal cutter. 4,395,167, Cl. 407-54.000.

Mathew, Plackottu J., to Commonwealth Scientific and Industrial Research Organization. Level gauge using neutron irradiation. 4,395,633, Cl. 250-357.100.

Mathews, Marion J., III: *See*—
Cutchens, Charles E.; Mathews, Marion J., III; and Sowell, Mark S., III, 4,395,573, Cl. 564-492.000.

Mathis, Paul; and Zimmer, Max, to Mathis System-Technik GmbH. Mixing tower for concrete or the like. 4,395,128, Cl. 366-18.000.

Mathis System-Technik GmbH: *See*—
Mathis, Paul; and Zimmer, Max, 4,395,128, Cl. 366-18.000.

Matsuda, Terumi; Ishiguro, Shoji; Moriuchi, Shigenori; and Suzuki, Yoshiaki, to Fuji Photo Film Co., Ltd. Direct positive type silver halide photosensitive material. 4,395,483, Cl. 430-411.000.

Matsue, Shigeki, to Nippon Electric Co., Ltd. Memory device utilizing shift registers for data accessing. 4,395,764, Cl. 365-78.000.

Matsufuji, Yohji: *See*—
Eida, Tsuyoshi; Yano, Yasuhiro; Haruta, Masahiro; Matsufuji, Yohji; and Ohta, Tokuya, 4,395,288, Cl. 106-22.000.

Matsumaru, Haruo: *See*—
Sasano, Akira; Nakano, Toshio; Tsutsui, Ken; Hashimoto, Michiaki; Kaneko, Tadao; Taniguchi, Yoshio; Matsumaru, Haruo; and Izumi, Akiya, 4,395,629, Cl. 250-226.000.

Matsumoto, Seiko: *See*—
Kobayashi, Masatsune; Matsumoto, Seiko; Haruta, Masahiro; and Ohta, Tokuya, 4,395,287, Cl. 106-20.000.

Matsuno, Kunio: *See*—
Sanpei, Hideo; Matsuno, Kunio; Hirano, Shyoji; and Kumagai, Katuya, 4,395,435, Cl. 427-38.000.

Matsushita Electric Industrial Co., Ltd.: *See*—
Abe, Atsushi; Ogawa, Hisahito; and Nishikawa, Masahiro, 4,395,440, Cl. 427-180.000.
Kobayashi, Masaaki; Igata, Kouichi; and Takeuchi, Akihiro, 4,395,741, Cl. 360-77.000.
Maeda, Masanori; Ishihara, Koji; and Kino, Yoshio, 4,395,617, Cl. 219-145.100.
Maruyama, Teruo; Taguchi, Tatsuhisa; and Onoda, Tadayuki, 4,395,208, Cl. 418-102.000.
Yano, Masayoshi; and Hirose, Fuminori, 4,395,079, Cl. 312-7.100.
Yoda, Kenichi; Togawa, Hideo; Ogawa, Eizou; and Kayahara, Masao, 4,395,136, Cl. 368-156.000.
Yokobori, Nobuyoshi; Maeda, Tetsuo; and Igarashi, Yoshiaki, 4,395,682, Cl. 330-260.000.

Matsushita Electric Works, Ltd.: *See*—
Yoda, Kenichi; Togawa, Hideo; Ogawa, Eizou; and Kayahara, Masao, 4,395,136, Cl. 368-156.000.

Matsuura, Miyuki: *See*—
Yonezawa, Kazuya; Asada, Masahiro; and Matsuura, Miyuki, 4,395,537, Cl. 528-219.000.

Matsuura, Yoshio: *See*—
Nakabayashi, Yasuyuki; Matsuura, Yoshio; Kurihara, Michio; Kamei, Takao; Nakamura, Akira; Komai, Keiichi; Shimotamari, Akira; and Wakabayashi, Takeshi, 4,395,334, Cl. 210-631.000.

Matthews, John, to Crayonne Limited. Injection moulding machines. 4,395,376, Cl. 264-73.000.

Maudal, Inge, to General Dynamics, Pomona Division. Sequential time discrimination system for sub-delivery systems. 4,394,997, Cl. 244-3.160.

Maulard, Jean: *See*—
Taillet, Joseph; and Maulard, Jean, 4,394,998, Cl. 244-31.000.

Maulding, Donald R., to American Cyanamid Company. Preparation of 3-chloromethyl-4-alkyl-nitrobenzene by chloromethylation. 4,395,577, Cl. 568-936.000.

Maurer, Helmut: *See*—
Latsch, Reinhard; Linder, Ernst; Maurer, Helmut; Muller, Klaus; and Rieger, Franz, 4,394,855, Cl. 123-254.000.

Max-Planck-Gesellschaft zur Forderung: *See*—
Kettenring, Gunther, 4,395,650, Cl. 310-82.000.

Mayer, Franz: *See*—
Gebauer, Gerhard; and Mayer, Franz, 4,395,445, Cl. 427-407.100.

Mazanko, Anatoly F.: *See*—
Golubkov, Sergei V.; Druzhinin, Ernest A.; Zimin, Vladimir M.; Kubasov, Vladimir L.; Lvovich, Florenty I.; and Mazanko, Anatoly F., 4,395,314, Cl. 204-98.000.

Mazzoni, Guido, to Costruzioni Meccaniche G. Mazzoni S.p.A. Offset device for arranging along two parallel lines, articles which arrive from a single line. 4,394,902, Cl. 198-436.000.

McBride, Edward D.: *See*—
Hall, Charles B.; McBride, Edward D.; and Young, Robert F., 4,395,239, Cl. 440-61.000.

McCarney, Greg J., to Minnesota Mining and Manufacturing Company. Roomlight-stable ultraviolet-response photothermographic imaging material. 4,395,484, Cl. 430-620.000.

McCarter, Harry: *See*—
Ferris, William E., deceased; Hennessy, Gail, executrix; Doumas, John; and McCarter, Harry, 4,395,375, Cl. 264-40.100.

McClung, Charles E., to United States of America, National Aeronautics and Space Administration. Antenna grout replacement system. 4,395,503, Cl. 523-440.000.

McComas, Jerry L.; and Crawford, Donald C., to FMC Corporation. Backlog control system for processing machine. 4,394,896, Cl. 198-341.000.

McCormick, Robert C., to HyJacker Products, Inc. Collapsible bootjack. 4,394,946, Cl. 223-115.000.

McCreery, Richard L.; McCurdy, Clyde W.; and Rossi, Paula J., to Ohio State University Research Foundation, The. Method and apparatus for the analysis of solution adjacent an electrode. 4,395,312, Cl. 204-1.00T.

McCubbrey, David L.; and Richardson, Ralph E., to Environmental Research Institute of Michigan. Image analyzer with variable line storage. 4,395,700, Cl. 382-27.000.

McCubbrey, David L.: *See*—
Dargel, William O.; Lougheed, Robert M.; McCubbrey, David L.; and Richardson, Ralph E., 4,395,697, Cl. 382-41.000.
Sternberg, Stanley R.; Dargel, William O.; Lougheed, Robert M.; McCubbrey, David L.; and Richardson, Ralph E., 4,395,698, Cl. 382-27.000.

McCullough, John E., to Arthur D. Little, Inc. Mechanically actuated tip seals for scroll apparatus and scroll apparatus embodying the same. 4,395,205, Cl. 418-55.000.

McCurdy, Clyde W.: *See*—
McCreery, Richard L.; McCurdy, Clyde W.; and Rossi, Paula J., 4,395,312, Cl. 204-1.00T.

McDonald, Charles J., to Dow Chemical Company, The. Preparation of aminomethanols. 4,395,311, Cl. 203-34.000.

McDonnell Douglas Corporation: *See*—
Meares, Lawrence G., 4,395,751, Cl. 363-134.000.

McGill, Lee E.: *See*—
von Alven, Raymond D.; and McGill, Lee E., 4,394,919, Cl. 215-253.000.

McGovern, Stephen J.; Owens, Peter J.; and Dolan, Michael J., to Mobil Oil Corporation. Reducing sulfur trioxide concentration in regeneration zone flue gas. 4,395,325, Cl. 208-113.000.

McIlrath, Thomas J.: *See*—
Roberts, James R.; McIlrath, Thomas J.; and Lucatorto, Thomas B., 4,395,775, Cl. 378-145.000.

McKee, William H., to TRW Inc. Clamp construction for use in optical fiber cables. 4,395,089, Cl. 350-96.200.

McLaughlin, Homer C., to Halliburton Company. Enhanced oil recovery methods and systems. 4,395,340, Cl. 252-8.55D.

McLaughlin, James H.; Dente, Stephen V.; Carmello, Robert; and Smith, James A., to Airwick Industries, Inc. Powdered carpet cleaner containing ether alcohol solvents. 4,395,347, Cl. 252-139.000.

McLelland, Bruce, to Fike Metal Products Corporation. Horizontal discharge assembly for vertically oriented fire extinguisher. 4,394,868, Cl. 137-68.00A.

Mead Corporation, The: *See*—
Bakx, Martinus C. M., 4,394,903, Cl. 206-427.000.

Meares, Lawrence G., to McDonnell Douglas Corporation. Flux-balanced variable frequency inverter. 4,395,751, Cl. 363-134.000.

Medical College of Ga. Research Inst., Inc.: *See*—
Wilson, Lois B.; Wilson, John T.; and Geever, Robert F., 4,395,486, Cl. 435-6.000.

Medovar, Boris I.; Gladky, Evgeny D.; Bondarenko, Oleg P.; Chekotilo, Leonty V.; Zayats, Valery I.; Egorov, Sergei P.; and Skosnyagin, Jury A. Method and apparatus for controlling process of casting thin walled ingots using electroslag melting process. 4,395,771, Cl. 373-49.000.

Mehl, Dietholf: *See*—
Thor, Gunter; Stoffler, Albert; and Mehl, Dietholf, 4,394,939, Cl. 222-207.000.

Meier, Paul: *See*—
Weil, Wolfgang; Lanz, Andres; Vogt, Max; Meier, Paul; Kaul, Martin; and Fankhauser, Hanspeter, 4,395,614, Cl. 219-72.000.

Meise, Gunther; and Unger, Herbert, to Wabco Fahrzeugbremsen GmbH. Method of coating the working surfaces of piston operating devices. 4,395,442, Cl. 427-236.000.

Mellqvist, Carl-Olof H.: *See*—
Clevenholm, Roy L. R.; and Mellqvist, Carl-Olof H., 4,395,133, Cl. 366-241.000.

Melys, Aleksandras A., to Sweda International, Inc. Electrical connector. 4,395,081, Cl. 339-14.00R.

Menard, Roger O. Plastic emergency power pack for vehicle trailer. 4,395,696, Cl. 340-74.000.

Merck Patent Gesellschaft mit Beschrankter Haftung: *See*—
Bodart, Detlef; and Bitsch, Roland, 4,395,494, Cl. 436-111.000.

Merkert, Rodney F., to Elkem Metals Company. Low density compacts of prepared mix for use in the production of silicon and ferrosilicon. 4,395,285, Cl. 75-256.000.

Mesco, Inc.: *See*—
Tsurimoto, Hidetoshi; Tokunaga, Koichi; and Schonfeldt, Martin K., 4,395,175, Cl. 414-21.000.

Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung: *See*—
Botzler, Ludwig, 4,394,999, Cl. 244-78.000.

Meszaros, Zoltan: *See*—
Hermecz, Istvan; Kokosi, Jozsef; Horvath, Agnes; Meszaros, Zoltan; Szasz, Gyorgy; Breining, Tibor; and Vasvari nee Debreczy, Lelle, 4,395,549, Cl. 544-252.000.

Meulenberg, Andrew, Jr., to Communications Satellite Corporation. Optimized back contact for solar cells. 4,395,583, Cl. 136-256.000.

Mewes, Gunter: *See*—
Pietsch, Gunter; Walter, Gerhard; Mewes, Gunter; and Schrader, Gert, 4,395,141, Cl. 384-147.000.

Meyer, Charles L.: *See*—
Wilson, Edwin B.; Ehes, C. Frederick; Meyer, Charles L.; and Schaeffer, Charles W., 4,395,161, Cl. 405-259.000.

Meyerand, Russell G., Jr.: *See*—
Smith, David C.; and Meyerand, Russell G., Jr., 4,395,616, Cl. 219-121.00L.

Meyerle, John A., to Bell Telephone Laboratories, Incorporated. Method and apparatus for forcing randomization of idle channel seizures. 4,395,594, Cl. 179-2.0EB.

Mezei, Tibor: *See*—
Budai, Zoltan; Lay nee Konya, Aranka; Mezei, Tibor; Petocz, Lujza; Grasser, Katalin; Kosoczky, Ibolya; Szirt nee Kiszelly, Eniko; and Gorog, Peter, 4,395,413, Cl. 424-250.000.

Mezger, Hans, to Dr. Ing. h.c.F. Porsche Aktiengesellschaft. Supercharged internal combustion engine for motor vehicles. 4,394,812, Cl. 60-600.000.

Midland-Ross Corporation: *See*—
Wilson, Clive J., 4,394,982, Cl. 241-183.000.

Mihama Manufacturing Co., Ltd.: *See*—
Hama, Mamoru, 4,395,210, Cl. 425-71.000.

Mijala, Ari A. M., to Oy Tampella AB. Method for improving the utilization of heat energy produced in a wood grinding process. 4,394,977, Cl. 241-21.000.

Mikami, Yoichi: *See*—
Takagi, Toshinori; Nakata, Shinsaku; Mikami, Yoichi; Hotta, Masahiro; and Fukumoto, Yoshiyuki, 4,395,465, Cl. 428-626.000.

Miles Laboratories, Inc.: *See*—
Kramer, Donald L., 4,395,126, Cl. 356-417.000.

Mille Note System S.r.l.: *See*—
Sferragatta, Enrico, 4,395,056, Cl. 281-31.000.

Miller, Daniel A., to Nestier Corporation. Shelf for order picking systems. 4,394,910, Cl. 211-490.000.

Minami, Syuji; Kashiwa, Norio; Kato, Akifumi; and Watanabe, Junichi, to Mitsui Petrochemical Industries, Ltd. Physically blended propylene polymer composition. 4,395,519, Cl. 525-240.000.

Minnesota Mining and Manufacturing Company: *See*—
Benham, Judith L., 4,395,498, Cl. 523-158.000.
Hipp, Richard D., Jr., 4,395,032, Cl. 271-10.000.
Larimore, Franklin C., 4,394,904, Cl. 206-447.000.
McCarney, Greg J., 4,395,484, Cl. 430-620.000.
Moris, Alfred H., 4,394,989, Cl. 242-55.19A.
Ostroff, Arthur, 4,395,742, Cl. 360-78.000.

Minolta Camera Kabushiki Kaisha: *See*—
Fukui, Kazuyuki, 4,395,034, Cl. 271-21.000.

Minott, Peter O., to United States of America, National Aeronautics and Space Administration. Interferometric angle monitor. 4,395,123, Cl. 356-353.000.

Miquel, Jean: *See*—
Juguin, Bernard; Miquel, Jean; Hellin, Michel; and Torck, Bernard, 4,395,580, Cl. 585-639.000.

Misaizu, Tetsuo, to Nippon Electric Co., Ltd. Drive circuit. 4,395,644, Cl. 307-270.000.

Miskinis, Robert J. Glassware stopper with venting valve. 4,394,921, Cl. 215-296.000.

Miskinis, Robert J. Glassware stopcock with freeze extractor. 4,395,382, Cl. 422-103.000.

Mita Industrial Co., Ltd.: *See*—
Miyakawa, Nobuhiro; Shibata, Kiyoshi; Watanabe, Toshio; and Ohata, Yosuke, 4,395,112, Cl. 355-14.00D.

Mitsubishi Gas Chemical Company, Inc.: *See*—
Shimizu, Senzo; Nomura, Isao; Harada, Masahiro; Usui, Motohachi; Taniyama, Susumu; and Yanada, Shigeo, 4,395,534, Cl. 528-126.000.

Mitsubishi Kinzoku Kabushiki Kaisha: *See*—
Kashiwagi, Takashi; and Kasutani, Hiroshi, 4,395,169, Cl. 408-59.000.

Mitsui Engineering and Shipbuilding Company Limited: *See*—
Tanaka, Yoshiharu; Watanabe, Yoshiaki; and Sasaki, Kou, 4,394,813, Cl. 60-618.000.

Mitsui Petrochemical Industries, Ltd.: *See*—
Minami, Syuji; Kashiwa, Norio; Kato, Akifumi; and Watanabe, Junichi, 4,395,519, Cl. 525-240.000.

Mitsui Toatsu Chemical Incorporated: *See*—
Toyoda, Toshihiro; Kawamata, Motoo; Osawa, Masanori; Itoh, Masayoshi; Mizutani, Kazumi; and Kono, Masahiro, 4,395,531, Cl. 528-49.000.

Mittmann, Bernd, to Webasto-Werk W. Baier GmbH and Co. Burner operated with liquid fuel for heating devices. 4,395,225, Cl. 431-62.000.

Miura, Takuji: *See*—
Suzuki, Kiyoaki; Watanabe, Masaru; Yamamoto, Hisashi; Hayashi, Tomoharu; and Miura, Takuji, 4,395,597, Cl. 179-115.50R.

Miyakawa, Nobuhiro; Shibata, Kiyoshi; Watanabe, Toshio; and Ohata, Yosuke, to Mita Industrial Co., Ltd. Latent electrostatic image developing device. 4,395,112, Cl. 355-14.00D.

Miyashita, Kiyoshi: *See*—
Tsuda, Hiroshi; Miyashita, Kiyoshi; Shimizu, Akira; Nishikawa, Masaji; and Kasuga, Munco, 4,395,115, Cl. 355-25.000.

Mizusawa, Mitsutoyo; Seki, Masayuki; and Sunohara, Kazuo, to Nisshin Kogyo Kabushiki Kaisha. Automated braking-gap adjuster system for mechanical drum brake. 4,394,892, Cl. 188-196.0BA.

Mizutani, Kazumi: *See*—
Toyoda, Toshihiro; Kawamata, Motoo; Osawa, Masanori; Itoh, Masayoshi; Mizutani, Kazumi; and Kono, Masahiro, 4,395,531, Cl. 528-49.000.

Mobil Oil Corporation: *See*—
Chang, Clarence D.; and Perkins, Patrick D., 4,395,554, Cl. 546-250.000.
Derbyshire, Francis J.; Varghese, Philip; and Whitehurst, Darrell D., 4,395,324, Cl. 208-56.000.
Herrington, F. John, 4,395,221, Cl. 425-467.000.
Kaufman, Marvin L.; and Salathe, George F., 4,395,522, Cl. 525-524.000.
McGovern, Stephen J.; Owens, Peter J.; and Dolan, Michael J., 4,395,325, Cl. 208-113.000.
Pelrine, Bruce P., 4,395,327, Cl. 208-216.00R.
Searles, Raymond C., 4,395,019, Cl. 251-357.000.

Moen, Alfred M., to Stanadyne, Inc. Valve member with fixed seal shutoff. 4,395,018, Cl. 251-310.000.

Moffitt, Bryan S.; and Ross, Alexander R., to Bell Telephone Laboratories, Incorporated. Multiport memory array. 4,395,765, Cl. 365-174.000.

Mohrman, Richard C., to Bausch & Lomb Incorporated. Compact refraction instrument. 4,395,097, Cl. 351-201.000.

Moinet, Gerard H.: *See*—
Langlois, Michel; Bucher, Bernard P.; Dostert, Philippe L.; Lacour, Alain P.; and Moinet, Gerard H., 4,395,416, Cl. 424-267.000.

Molloy, Bryan B.; and Steinberg, Mitchell I., to Eli Lilly and Company. Quaternary ammonium antiarrhythmic drugs. 4,395,410, Cl. 424-244.000.

Molnar, Attila; Csermely, Gyorgy; and Lanyi, Gyorgy, to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara Rt. Anionic surface active agents. 4,395,568, Cl. 560-198.000.

Monsanto Company: *See*—
Cutchens, Charles E.; Mathews, Marion J., III; and Sowell, Mark S., III, 4,395,573, Cl. 564-492.000.
Dutra, Gerard A.; and Sikorski, James A., 4,395,374, Cl. 260-941.000.
Purdum, William R., 4,395,275, Cl. 71-87.000.
Sikorski, James A.; and Curtis, Tommie G., 4,395,276, Cl. 71-87.000.

Montedison S.p.A.: *See*—
Giannetti, Enzo; and Scata, Umberto, 4,395,360, Cl. 252-429.00B.
Nelli, Giuseppe; and Oriani, Roberto, 4,395,508, Cl. 524-103.000.

Moore, Howard G.: *See*—
Pacifici, James G.; Newland, Gordon C.; and Moore, Howard G., 4,395,539, Cl. 528-291.000.

Moore, Richard C.: *See*—
Dekeyser, Mark A.; Pierce, Benjamin J.; Moore, Richard C.; and Hubbard, Winchester L., 4,395,551, Cl. 544-282.000.

Moore, Victor S.: *See*—
Cases, Moises; Kraft, Wayne R.; Moore, Victor S.; Stahl, William L., Jr.; and Thoma, Nandor G., 4,395,646, Cl. 307-468.000.

Moree, Elwood D.; and Snowden, Dennis C. Conduit bending plane indicator. 4,394,799, Cl. 33-343.000.

Morgan Construction Company: *See*—
Simons, Keith F., 4,394,822, Cl. 72-235.000.

Morgan, Malcolm F.: *See*—
Connell, Peter P.; and Morgan, Malcolm F., 4,395,683, Cl. 331-2.000.

Mori, Fumio: *See*—
Kunimoto, Go; Ichinose, Isao; Suzuki, Noboru; and Mori, Fumio, 4,395,446, Cl. 428-35.000.

Moriguchi, Fujio: *See*—
Murayama, Tomio; Kikuchi, Yoshiki; Moriguchi, Haruhiko; Ohmori, Takashi; and Moriguchi, Fujio, 4,395,718, Cl. 346-135.100.

Moriguchi, Haruhiko: *See*—
Murayama, Tomio; Kikuchi, Yoshiki; Moriguchi, Haruhiko; Ohmori, Takashi; and Moriguchi, Fujio, 4,395,718, Cl. 346-135.100.

Morimoto, Ichiro, to Olympus Optical Company Ltd. Apparatus for presetting photographing distance for camera. 4,395,101, Cl. 354-128.000.

Moris, Alfred H., to Minnesota Mining and Manufacturing Company. Adjustable endless loop tape cartridge with shipping lock. 4,394,989, Cl. 242-55.19A.

Morita, Shuji: *See*—
Kasashima, Tatsuji; Morita, Shuji; Hayami, Hiroyuki; Ose, Seiroku; Takada, Yoshinori; and Nozaki, Fumihiro, 4,395,320, Cl. 204-206.000.

Moriuchi, Shigenori: *See*—
Matsuda, Terumi; Ishiguro, Shoji; Moriuchi, Shigenori; and Suzuki, Yoshiaki, 4,395,483, Cl. 430-411.000.

Morofuji, Akihiko: *See*—
Taira, Kazuo; Morofuji, Akihiko; and Ueno, Hiroshi, 4,395,538, Cl. 528-272.000.

Morong, William H., III, to Analog Devices, Incorporated. Half-wave signal isolator with means for controlling flux in the coupling transformer. 4,395,647, Cl. 307-540.000.

Morse, John E., to Eastman Kodak Company. Color balanced scratch suppressing projection apparatus for color transparencies. 4,395,108, Cl. 355-1.000.

Motorola Inc.: *See*—
Piosenka, Gerald V., 4,395,703, Cl. 340-347.0AD.
Polcyn, Erwin R., 4,395,585, Cl. 174-138.00G.
Upton, Eric L., 4,395,732, Cl. 358-169.000.

Mudlake Holdings Ltd.: *See*—
Thorsell, Stanley E., 4,394,808, Cl. 52-483.000.

Muir, Robert D., to G. D. Searle & Co. Use of metronidazole in oil recovery. 4,395,341, Cl. 252-8.55D.

Muller, Klaus: *See*—
Latsch, Reinhard; Linder, Ernst; Maurer, Helmut; Muller, Klaus; and Rieger, Franz, 4,394,855, Cl. 123-254.000.

Muller, Manfred: *See*—
Kopke, Wolfgang; Muller, Manfred; Schmidt, Wolfgang; Eggert, Albert; Gahleitner, Erwin; and Raupach, Gerhard, 4,395,601, Cl. 179-179.000.

Muller, Werner, to Helmut Darda Spielwaren- und Maschinenbau GmbH. Track for toy vehicles with jumping-off and jumping-on ramps. 4,394,961, Cl. 238-10.00R.

Munch, Erhard: *See*—
Pav, Josef; and Munch, Erhard, 4,394,793, Cl. 29-116.0AD.

Munten, Gerard H. Dual mast lift truck for unbalanced loads and the like. 4,395,189, Cl. 414-635.000.

Murakami, Shozo; Isomura, Hukuyosi; and Koga, Yoshihiro, to Nippon Steel Corporation. Method of switching bottom-blown gases and apparatus therefor. 4,395,283, Cl. 75-60.000.

Murata Manufacturing Co., Ltd.: *See*—
Shimada, Minoru; and Torii, Kiyofumi, 4,395,623, Cl. 219-544.000.

Murata, Moriyasu; and Okahashi, Kenji, to Kao Soap Co., Ltd. Detergent composition containing sulfonate surfactant and polyoxyalkylene alkyl or alkenyl sulfuric acid ester salt. 4,395,364, Cl. 252-526.000.

Murayama, Tomio; Kikuchi, Yoshiki; Moriguchi, Haruhiko; Ohmori, Takashi; and Moriguchi, Fujio, to Fuji Xerox Co., Ltd. Thermal transfer recording medium. 4,395,718, Cl. 346-135.100.

Murphy, John M.; Spensley, Robert H.; and Ellis, John, to Societe Anonyme d'Explosifs et de Produits Chimiques. Cartridge for use in anchor bolting. 4,395,162, Cl. 405-261.000.

Musil, Joseph E., to Iowa Manufacturing Company of Cedar Rapids, Iowa. Feed system for asphalt recycling drum mixers. 4,395,129, Cl. 366-25.000.

Mutzel, Wolfgang: *See*—
Pfeiffer, Heinrich; Mutzel, Wolfgang; and Speck, Ulrich, 4,395,391, Cl. 424-5.000.

Naarmann, Herbert; Naegele, Dieter; Penzien, Klaus; and Schlag, Johannes, to BASF Aktiengesellschaft. Preparation of electrically conductive soluble heteropolyphenylenes. 4,395,497, Cl. 523-135.000.

Nabisco Brands, Inc.: *See*—
Koch, Albert P., 4,395,232, Cl. 432-32.000.

Naegele, Dieter: *See*—
Naarmann, Herbert; Naegele, Dieter; Penzien, Klaus; and Schlag, Johannes, 4,395,497, Cl. 523-135.000.

Nagae, Yoshiharu; Kitajima, Masaaki; and Kawakami, Hideaki, to Hitachi, Ltd. Driving device and method for matrix-type display panel using guest-host type phase transition liquid crystal. 4,395,709, Cl. 340-784.000.

Nagakubo, Yoshihide; and Kohyama, Susumu, to Tokyo Shibaura Denki Kabushiki Kaisha. Method for manufacturing a semiconductor device having regions of different thermal conductivity. 4,395,433, Cl. 427-35.000.

Nagano, Hayao; and Costemalle, Bernard J., to Exxon Research & Engineering Co. Addition of mineral rubber to halobutyl blends. 4,395,506, Cl. 524-68.000.

Nagata, Masayoshi: *See*—
Horie, Seiji; Nagata, Masayoshi; Nakano, Junji; and Sato, Hideo, 4,395,473, Cl. 430-58.000.

Naito, Yukio; Tamura, Masahide; and Takahashi, Shigeo, to Toyo Communication Equipment Co., Ltd. Transmitter having a phase synchronizing system. 4,395,776, Cl. 455-119.000.

Naka, Shinichi: *See*—
Yasuhira, Shuji; and Naka, Shinichi, 4,395,229, Cl. 431-261.000.

Nakabayashi, Yasuyuki; Matsuura, Yoshio; Kurihara, Michio; Kamei, Takao; Nakamura, Akira; Komai, Keiichi; Shimotamari, Akira; and Wakabayashi, Takeshi, to Electric Power Development Co. Ltd.; and Kawasaki Jukogyo Kabushiki Kaisha. Treatment of waste water in non-evaporating dehydration of low grade coal. 4,395,334, Cl. 210-631.000.

Nakagawa, Akira: *See*—
Noda, Kanji; Nakagawa, Akira; Haraguchi, Yasushi; Ueda, Koichiro; Hirano, Munehiko; Nishioka, Itsuo; Yagi, Akira; Koda, Akihide; and Ide, Hiroyuki, 4,395,405, Cl. 424-180.000.

Nakagawa, Takeo: *See*—
Osada, Yasuo; Nakagawa, Takeo; and Utsunomiya, Kimitake, 4,395,778, Cl. 455-276.000.

Nakai, Kaichiro: *See*—
Tada, Isao; Okamura, Toshio; Kousaka, Akira; and Nakai, Kaichiro, 4,395,657, Cl. 315-39.710.

Nakai, Yoshiharu: *See*—
Kamiya, Takashi; Teraji, Tsutomu; Nakai, Yoshiharu; Sakane, Kazuo; and Goto, Jiro, 4,395,411, Cl. 424-246.000.

Nakajima, Kichio: *See*—
Izumi, Eiki; Watanabe, Hiroshi; Aoyagi, Yukio; Honma, Kazuo; and Nakajima, Kichio, 4,395,199, Cl. 417-53.000.

Nakajima, Kiichi: *See*—
Kashiwagi, Michio; and Nakajima, Kiichi, 4,395,485, Cl. 430-903.000.

Nakajima, Shunichi; and Odaira, Hiroshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Fixing device for electronic duplicator machine. 4,395,109, Cl. 355-3.0FU.

Nakamatsu, Yoshiro. Medium for recording. 4,395,447, Cl. 428-66.000.

Nakamura, Akira: *See*—
Nakabayashi, Yasuyuki; Matsuura, Yoshio; Kurihara, Michio; Kamei, Takao; Nakamura, Akira; Komai, Keiichi; Shimotamari, Akira; and Wakabayashi, Takeshi, 4,395,334, Cl. 210-631.000.

Nakamura, Shigekazu, to Copal Company Limited. Non-contact magnetic potentiometer. 4,395,695, Cl. 338-32.00H.

Nakanishi, Masakatsu; and Nomura, Toshiyuki, to Rinnai Kabushiki Kaisha. Combustion safety apparatus. 4,395,226, Cl. 431-76.000.

Nakanishi, Toshiharu; Suzuki, Miyo; and Ohigashi, Hiroji, to Toray Industries, Inc. Ultrasonic transducer element. 4,395,652, Cl. 310-334.000.

Nakano, Junji: *See*—
Horie, Seiji; Nagata, Masayoshi; Nakano, Junji; and Sato, Hideo, 4,395,473, Cl. 430-58.000.

Nakano, Toshio: *See*—
Sasano, Akira; Nakano, Toshio; Tsutsui, Ken; Hashimoto, Michiaki; Kaneko, Tadao; Taniguchi, Yoshio; Matsumaru, Haruo; and Izumi, Akiya, 4,395,629, Cl. 250-226.000.

Nakata, Kazuo; Iochi, Akihiko; Kaise, Isamu; Takeuchi, Kazuo; and Nomura, Katsuhiko, to Kobe Steel, Limited. Method for automatic, non-destructive measurement of eccentricity of coated electrodes. 4,395,119, Cl. 356-73.000.

Nakata, Shinsaku: *See*—
Takagi, Toshinori; Nakata, Shinsaku; Mikami, Yoichi; Hotta, Masahiro; and Fukumoto, Yoshiyuki, 4,395,465, Cl. 428-626.000.

Nakazawa, Sadaharu, to Nissan Motor Co., Ltd. Heating apparatus for a passenger compartment of a motor vehicle. 4,394,960, Cl. 237-12.30C.

Nakazawa, Tetsuji; and Asai, Toshio, to Sony Corporation. Recording-/reproducing apparatus with selective attenuation of reproduced signals to facilitate comprehension of external speech signals. 4,395,739, Cl. 360-61.000.

Nalco Chemical Company: *See*—
Doles, Ronald S., 4,395,505, Cl. 524-55.000.

Namiki, Masayuki; Kamiya, Masaaki; Kojima, Yoshikazu; and Tanaka, Kojiro, to Kabushiki Kaisha Daini Seikosha. Temperature detecting device. 4,395,139, Cl. 374-178.000.

Napper, Roger L. Escapable-window-security-guard system. 4,394,805, Cl. 49-55.000.

Narazaki, Sadatoshi: *See*—
Fujino, Teruhisa; Osawa, Fujio; Chiwaki, Kenichi; and Narazaki, Sadatoshi, 4,395,779, Cl. 455-306.000.

Nashua Corporation: *See*—
Buchan, William R.; and Cielakie, Eddie W., 4,395,113, Cl. 355-15.000.

National Carbide Tool, Inc.: *See*—
Maternus, Fred, 4,395,167, Cl. 407-54.000.

National Semiconductor Corporation: *See*—
Rapp, Adolph K., 4,395,774, Cl. 377-114.000.

National Starch And Chemical Corporation: *See*—
Rosenski, Josephine M.; and Fernandez, Joseph M., 4,395,499, Cl. 523-206.000.

Nedelec, Lucien: *See*—
Torelli, Vesperto; Deraedt, Roger; and Nedelec, Lucien, 4,395,408, Cl. 424-238.000.

Nelli, Giuseppe; and Oriani, Roberto, to Montedison S.p.A. Polycondensates of substituted piperidines and use thereof as stabilizers for polymers. 4,395,508, Cl. 524-103.000.

Nelson, Ben L.; and Hayes, Leonard L. Door stop mechanism. 4,395,065, Cl. 292-339.000.

Nelson, Grant W.: *See*—
Zaffrann, Albert A.; Borchardt, Robert E.; and Nelson, Grant W., 4,395,606, Cl. 200-144.00R.

Nelson, Jeffrey, to Findley Adhesives Inc. Hot melt adhesive compositions and bottle assemblies using said compositions. 4,394,915, Cl. 215-12.00R.

Nelson, Thomas E.; and Consor, Herbert A., to Antenna, Incorporated. Transit antenna. 4,395,713, Cl. 343-713.000.

Nemag B.V.: *See*—
van Huuksloot, Leendert, 4,395,066, Cl. 294-70.000.

Nestier Corporation: *See*—
Miller, Daniel A., 4,394,910, Cl. 211-490.000.

Neumann, Fred F.: *See*—
Stamboulian, Nazareth; and Neumann, Fred F., 4,394,993, Cl. 242-107.40A.

Neumann, Helmut C., to Sterling Drug Inc. Polycyclic cyanoketones. 4,395,423, Cl. 424-304.000.

Nevamar Corporation: *See*—
Scher, Herbert I.; and Ungar, Israel S., 4,395,452, Cl. 428-148.000.

Newland, Gordon C.: *See*—
Pacifici, James G.; Newland, Gordon C.; and Moore, Howard G., 4,395,539, Cl. 528-291.000.

Newton, John P., III. Sensor control device. 4,394,957, Cl. 236-49.000.

Nickel, Gerhard E. B.: *See*—
Alberghini, Alfred C.; and Nickel, Gerhard E. B., 4,395,378, Cl. 264-532.000.

Nidola, Antonio: *See*—
Bianchi, Giuseppe; Nidola, Antonio; and Martelli, Gian N., 4,395,436, Cl. 427-53.100.

Nieberle, Juergen; Peters, Karl-Clemens; Reuther, Wolfgang; and Bankowsky, Heinz-Hilmar, to BASF Aktiengesellschaft. Process for the manufacture of phenol-isobutyraldehyde condensation products. 4,395,535, Cl. 528-137.000.

Niedrich, Helmut: *See*—
Diekmann, Herbert; and Niedrich, Helmut, 4,394,840, Cl. 112-121.150.

Niemi, Thomas J.: *See*—
Brownfield, Jerry A.; Sandberg, Richard J.; Niemi, Thomas J.; and Howland, Leland L., 4,394,818, Cl. 62-239.000.

Nippon Air Brake Co., Ltd.: *See*—
Arikawa, Tetsuro; and Samatsu, Yasuo, 4,395,073, Cl. 303-116.000.

Nippon Electric Co., Ltd.: *See*—
Matsue, Shigeki, 4,395,764, Cl. 365-78.000.
Misaizu, Tetsuo, 4,395,644, Cl. 307-270.000.
Nishitani, Takao; and Kato, Tadaharu, 4,395,595, Cl. 179-84.0VF.

Nippon Kogaku K.K.: *See*—
Hamanishi, Yoshinari, 4,395,094, Cl. 350-467.000.
Takahashi, Fumio, 4,395,120, Cl. 356-125.000.

Nippon Steel Corporation: *See*—
Murakami, Shozo; Isomura, Hukuyosi; and Koga, Yoshihiro, 4,395,283, Cl. 75-60.000.
Terakado, Ryoji; Iwasa, Masaru; Takahashi, Ituo; Anzawa, Norio; and Yoshida, Gen, 4,395,021, Cl. 266-85.000.

Nishida, Hideo: *See*—
Yoshimaga, Yoichi; Nishida, Hideo; and Ueda, Shinjiro, 4,395,197, Cl. 415-211.000.

Nishikawa, Masahiro: *See*—
Abe, Atsushi; Ogawa, Hisahito; and Nishikawa, Masahiro, 4,395,440, Cl. 427-180.000.

Nishikawa, Masaji: *See*—
Tsuda, Hiroshi; Miyashita, Kiyoshi; Shimizu, Akira; Nishikawa, Masaji; and Kasuga, Muneo, 4,395,115, Cl. 355-25.000.

Nishioka, Itsuo: *See*—
Noda, Kanji; Nakagawa, Akira; Haraguchi, Yasushi; Ueda, Koichiro; Hirano, Munehiko; Nishioka, Itsuo; Yagi, Akira; Koda, Akihide; and Ide, Hiroyuki, 4,395,405, Cl. 424-180.000.

Nishitani, Takao; and Kato, Tadaharu, to Nippon Electric Co., Ltd. Digital pushbutton signalling receiver. 4,395,595, Cl. 179-84.0VF.

Nissan Motor Co., Ltd.: *See*—
Hasegawa, Masami; and Kato, Koji, 4,395,365, Cl. 252-545.000.
Hayashi, Yoshimasa, 4,394,850, Cl. 123-41.740.
Nakazawa, Sadaharu, 4,394,960, Cl. 237-12.30C.
Saito, Masaaki; and Ota, Tadaki, 4,394,974, Cl. 239-585.000.

Nisshin Kogyo Kabushiki Kaisha: *See*—
Mizusawa, Mitsutoyo; Seki, Masayuki; and Sunohara, Kazuo, 4,394,892, Cl. 188-196.0BA.

Niwa, Yukio: *See*—
Takenouchi, Akira; and Niwa, Yukio, 4,395,280, Cl. 75-28.000.

Nobumasa, Ohtake: *See*—
Yohji, Terui; Isao, Koga; and Nobumasa, Ohtake, 4,395,562, Cl. 556-431.000.

Noda, Hideo, to Shimano Industrial Company Limited. Double bearing fishing reel. 4,394,991, Cl. 242-84.10R.

Noda Institute for Scientific Research: *See*—
Saito, Narimasa; and Horiuchi, Tatsuo, 4,395,487, Cl. 435-22.000.

Noda, Kanji; Nakagawa, Akira; Haraguchi, Yasushi; Ueda, Koichiro; Hirano, Munehiko; Nishioka, Itsuo; Yagi, Akira; Koda, Akihide; and Ide, Hiroyuki, to Hisamitsu Pharmaceutical Co., Inc. Alkyl-ketohexopyrand-side derivatives and method of use. 4,395,405, Cl. 424-180.000.

Nomura, Hirokazu: *See*—
Imada, Kiyoshi; Ueno, Susumu; and Nomura, Hirokazu, 4,395,434, Cl. 427-38.000.

Nomura, Isao: *See*—
Shimizu, Senzo; Nomura, Isao; Harada, Masahiro; Usui, Motohachi; Taniyama, Susumu; and Yanada, Shigeo, 4,395,534, Cl. 528-126.000.

Nomura, Katsuhiko: *See*—
Nakata, Kazuo; Iochi, Akihiko; Kaise, Isamu; Takeuchi, Kazuo; and Nomura, Katsuhiko, 4,395,119, Cl. 356-73.000.

Nomura, Toshiyuki: *See*—
Nakanishi, Masakatsu; and Nomura, Toshiyuki, 4,395,226, Cl. 431-76.000.

Noonan, John M.; and Perlstein, Jerome H., to Eastman Kodak Company. Condensation polymeric photoconductors containing pendant arylamines. 4,395,475, Cl. 430-69.000.

Nordmeyer, Robert A. Pressure intensifying device. 4,395,027, Cl. 269-25.000.

Nordstrand, David P.: *See*—
Czajka, Dennis C.; and Nordstrand, David P., 4,394,871, Cl. 137-115.000.

Norris, Andrew P.: *See*—
Davies, Arthur B. C.; and Norris, Andrew P., 4,395,685, Cl. 333-125.000.

Northrup, Thomas A.: *See*—
Helenius, Allan; Lackey, Stanley A., Jr.; and Northrup, Thomas A., 4,395,758, Cl. 364-200.000.

Nory, Pierre; and Ripart, Guy, to Societe Anonyme dite: Compagnie Industrielle des Lasers. Apparatus for determining the angular position of a target illuminated by light pulses. 4,395,121, Cl. 356-152.000.

Nozaki, Fumihiro: *See*—
Kasashima, Tatsuji; Morita, Shuji; Hayami, Hiroyuki; Ose, Seiroku; Takada, Yoshinori; and Nozaki, Fumihiro, 4,395,320, Cl. 204-206.000.

NRM Corporation: *See*—
Singh, Anand P.; and Shichman, Daniel, 4,395,209, Cl. 425-33.000.

N.V. Nederlandse Gasunie: *See*—
de Vries, Auke O. T., 4,394,959, Cl. 237-2.00B.

Nyegaard & Co. A/S: *See*—
Gacek, Mikkel J.; Oftebro, Reidar; Laland, Soren; and Undheim, Kjell, 4,395,406, Cl. 424-180.000.

O. A. Newton & Son Company: *See*—
Barlow, Robert C., 4,395,131, Cl. 366-141.000.

O&K Orenstein & Koppel Aktiengesellschaft: *See*—
Rathje, Uwe; and Lappe, Manfred, 4,394,886, Cl. 180-140.000.

Occidental Research Corporation: *See*—
Salisbury, Winfield W., 4,395,631, Cl. 250-251.000.

Ochiai, Hirokazu: *See*—
Saikawa, Isamu; Takano, Shuntaro; Imaizumi, Hiroyuki; Takakura, Isamu; Ochiai, Hirokazu; Yasuda, Takashi; Taki, Hideo; Tai, Masaru; and Kodama, Yutaka, 4,395,412, Cl. 424-246.000.
Odaira, Hiroshi: *See*—
Nakajima, Shunichi; and Odaira, Hiroshi, 4,395,109, Cl. 355-3.0FU.
Oeckl, Siegfried; Zahl, Gero; and Radt, Walter, to Bayer Aktiengesellschaft. Process for the preparation of 2-halogeno-3-sulphonyl-acrylonitriles. 4,395,371, Cl. 260-464.000.
Oeschger, Frank A.: *See*—
Branecky, George N.; Roetter, Frank T.; and Oeschger, Frank A., 4,395,255, Cl. 493-439.000.
Office National d'Etudes et de Recherche Aerospatiales (ONERA): *See*—
Taillet, Joseph; and Maulard, Jean, 4,394,998, Cl. 244-31.000.
Oftebro, Reidar: *See*—
Gacek, Mikkel J.; Oftebro, Reidar; Laland, Soren; and Undheim, Kjell, 4,395,406, Cl. 424-180.000.
Ogawa, Eizou: *See*—
Yoda, Kenichi; Togawa, Hideo; Ogawa, Eizou; and Kayahara, Masao, 4,395,136, Cl. 368-156.000.
Ogawa, Hiroshi; and Tamai, Yasuo, to Fuji Photo Film Co., Ltd. Magnetic recording medium. 4,395,466, Cl. 428-695.000.
Ogawa, Hisahito: *See*—
Abe, Atsushi; Ogawa, Hisahito; and Nishikawa, Masahiro, 4,395,440, Cl. 427-180.000.
O'Hare, Edward J., to General Signal Corp. Linear detection of a DME signal. 4,395,712, Cl. 343-7.300.
Ohata, Yosuke: *See*—
Miyakawa, Nobuhiro; Shibata, Kiyoshi; Watanabe, Toshio; and Ohata, Yosuke, 4,395,112, Cl. 355-14.00D.
Ohi, Akira: *See*—
Imai, Tatuhiko; and Ohi, Akira, 4,395,516, Cl. 525-71.000.
Ohigashi, Hiroji: *See*—
Nakanishi, Toshiharu; Suzuki, Miyo; and Ohigashi, Hiroji, 4,395,652, Cl. 310-334.000.
Ohio State University Research Foundation, The: *See*—
McCreery, Richard L.; McCurdy, Clyde W.; and Rossi, Paula J., 4,395,312, Cl. 204-1.00T.
Ohki, Eiji; Oida, Sadao; Yoshida, Akira; Hayashi, Teruo; and Sugawara, Shinichi, to Sankyo Company Limited. Penem-3-carboxylic acid derivatives. 4,395,418, Cl. 424-270.000.
Ohmori, Taiji: *See*—
Sato, Makoto; Ohmori, Taiji; and Tsuchiya, Yoshikazu, 4,395,761, Cl. 364-426.000.
Ohmori, Takashi: *See*—
Murayama, Tomio; Kikuchi, Yoshiki; Moriguchi, Haruhiko; Ohmori, Takashi; and Moriguchi, Fujio, 4,395,718, Cl. 346-135.100.
Ohnishi, Masahiro; Oosaka, Shigenori; and Oono, Hiroshi, to Fuji Photo Film Co., Ltd. Laser type recording device. 4,395,766, Cl. 369-47.000.
Ohno, Mitsuo; Hatazawa, Kikuo; and Abe, Akira, to Hitachi, Ltd. Laser beam printer. 4,395,721, Cl. 346-160.000.
Ohta, Tokuya: *See*—
Eida, Tsuyoshi; Yano, Yasuhiro; Haruta, Masahiro; Matsufuji, Yohji; and Ohta, Tokuya, 4,395,288, Cl. 106-22.000.
Kobayashi, Masatsune; Matsumoto, Seiko; Haruta, Masahiro; and Ohta, Tokuya, 4,395,287, Cl. 106-20.000.
Oida, Sadao: *See*—
Ohki, Eiji; Oida, Sadao; Yoshida, Akira; Hayashi, Teruo; and Sugawara, Shinichi, 4,395,418, Cl. 424-270.000.
Okahashi, Kenji: *See*—
Murata, Moriyasu; and Okahashi, Kenji, 4,395,364, Cl. 252-526.000.
Okamura, Toshio: *See*—
Tada, Isao; Okamura, Toshio; Kousaka, Akira; and Nakai, Kaichiro, 4,395,657, Cl. 315-39.710.
Oki, Ryuji; and Ebisawa, Takashi, to Sony Corporation. Double superheterodyne receiver. 4,395,777, Cl. 455-183.000.
Okigami, Noboru; Hayasaka, Hiroshi; Sekiguchi, Yoshitoshi; and Tamura, Harushige, to Hitachi Shipbuilding & Engineering Co., Ltd. Multi-stage combustion method for inhibiting formation of nitrogen oxides. 4,395,223, Cl. 431-10.000.
Okino, Tadashi, to Canon Kabushiki Kaisha. Proper light emission indicating device for computer flash device. 4,395,658, Cl. 315-134.000.
Okura, Zenichi: *See*—
Kawasaki, Masahiro; Okura, Zenichi; and Urano, Fumio, 4,395,106, Cl. 354-271.000.
Olderaan, Wilhelmus F. T. C.: *See*—
Herder, Kornelis; and Olderaan, Wilhelmus F. T. C., 4,395,379, Cl. 264-573.000.
Olin Corporation: *See*—
Lines, Ellwood L., Jr.; and Farmer, Douglas A., Jr., 4,395,453, Cl. 428-216.000.
Shapiro, Eugene, 4,395,295, Cl. 148-11.50C.
Oller, Osvaldo A.; Hansen, Eric R.; and Eaker, Gerard L., to Gulf & Western Industries, Inc. Method of manufacturing cement raw mix. 4,395,290, Cl. 106-100.000.
Olsen, Dick M.: *See*—
Gniewek, Stephen A.; and Olsen, Dick M., 4,395,679, Cl. 324-379.000.
Olympus Optical Co., Ltd.: *See*—
Kaneko, Nobutaka; and Fujiwara, Toshihide, 4,395,125, Cl. 356-400.000.
Kondo, Isao, 4,395,100, Cl. 354-33.000.
Morimoto, Ichiro, 4,395,101, Cl. 354-128.000.
Tsuda, Hiroshi; Miyashita, Kiyoshi; Shimizu, Akira; Nishikawa, Masaji; and Kasuga, Muneo, 4,395,115, Cl. 355-25.000.
Onoda, Tadayuki: *See*—
Maruyama, Teruo; Taguchi, Tatsuhisa; and Onoda, Tadayuki, 4,395,208, Cl. 418-102.000.
Oono, Hiroshi: *See*—
Ohnishi, Masahiro; Oosaka, Shigenori; and Oono, Hiroshi, 4,395,766, Cl. 369-47.000.
Oono, Hirotoshi, to Victor Company of Japan. Tape fast-forwarding and rewinding apparatus. 4,394,994, Cl. 242-200.000.
Oosaka, Shigenori: *See*—
Ohnishi, Masahiro; Oosaka, Shigenori; and Oono, Hiroshi, 4,395,766, Cl. 369-47.000.
Opprecht, Paul: *See*—
Weil, Wolfgang; Lanz, Andres; Vogt, Max; Meier, Paul; Kaul, Martin; and Fankhauser, Hanspeter, 4,395,614, Cl. 219-72.000.
Oriani, Roberto: *See*—
Nelli, Giuseppe; and Oriani, Roberto, 4,395,508, Cl. 524-103.000.
Orlando, Mario. Zero setting mechanism for service station pumps. 4,394,935, Cl. 222-35.000.
Orndorff, Karl B.: *See*—
Sherwood, Edward F.; and Orndorff, Karl B., 4,394,809, Cl. 52-512.000.
Oronzio de Nora Impianti Elettrochimici S.p.A.: *See*—
Bianchi, Giuseppe; Nidola, Antonio; and Martelli, Gian N., 4,395,436, Cl. 427-53.100.
Ortiz, Nilson V. Rotor driven buoyant toy. 4,394,804, Cl. 46-250.000.
Osada, Yasuo; Nakagawa, Takeo; and Utsunomiya, Kimitake, to Sony Corporation. Undesired signal canceller. 4,395,778, Cl. 455-276.000.
Osaka Yuki Kagaku Kogyo Kabushiki Kaisha: *See*—
Kinoshita, Koji, 4,395,349, Cl. 252-182.000.
Osawa, Fujio: *See*—
Fujino, Teruhisa; Osawa, Fujio; Chiwaki, Kenichi; and Narazaki, Sadatoshi, 4,395,779, Cl. 455-306.000.
Osawa, Masanori: *See*—
Toyoda, Toshihiro; Kawamata, Motoo; Osawa, Masanori; Itoh, Masayoshi; Mizutani, Kazumi; and Kono, Masahiro, 4,395,531, Cl. 528-49.000.
Osbond, John M.: *See*—
Fothergill, Graham A.; and Osbond, John M., 4,395,559, Cl. 548-485.000.
Ose, Seiroku: *See*—
Kasashima, Tatsuji; Morita, Shuji; Hayami, Hiroyuki; Ose, Seiroku; Takada, Yoshinori; and Nozaki, Fumihiro, 4,395,320, Cl. 204-206.000.
Oshima, Harumi, to Tokico Ltd. Disc brake. 4,394,891, Cl. 188-73.380.
Oshime, Yasuhiro: *See*—
Takeda, Shigeki; Shibata, Junichi; Shimakata, Masashi; Oshime, Yasuhiro; Gomi, Shintaro; and Kawamura, Katsuaki, 4,395,714, Cl. 343-725.000.
Ostroff, Arthur, to Minnesota Mining and Manufacturing Company. Home apparatus. 4,395,742, Cl. 360-78.000.
Ota, Tadaki: *See*—
Saito, Masaaki; and Ota, Tadaki, 4,394,974, Cl. 239-585.000.
Otani, Takashi: *See*—
Tomizawa, Fumio; Sobata, Katsutoshi; Yoshimatsu, Yoshiaki; Saito, Sadayuki; Otani, Takashi; and Hirano, Senzaburo, 4,395,023, Cl. 266-158.000.
Otis Elevator Company: *See*—
Gray, John E., 4,394,889, Cl. 187-29.00R.
Ou, Sam A.; and LaPelle, Ronald J., to BS & B Safety Systems, Inc. Reverse buckling rupture disk apparatus. 4,394,926, Cl. 220-89.00A.
Ourboard Marine Corporation: *See*—
Blanchard, Clarence E., 4,395,240, Cl. 440-86.000.
Outboard Marine Corporation: *See*—
Hall, Charles B.; McBride, Edward D.; and Young, Robert F., 4,395,239, Cl. 440-61.000.
Payne, Guy D., 4,395,238, Cl. 440-53.000.
Ovchinnikov, Jury A.; Ivanov, Vadim T.; Rostovtseva, Larisa I.; Andronova, Tatyana M.; Sorokina, Irina B.; and Malkova, Veronika P., to Institut Bioorganicheskoi Khimii Imeni M.M. Shemyakina Akademii Nauk SSSR. Glycopeptides and method for preparing same. 4,395,399, Cl. 424-177.000.
Owens-Illinois, Inc.: *See*—
Smalley, Ned J., 4,394,916, Cl. 215-220.000.
Owens, Peter J.: *See*—
McGovern, Stephen J.; Owens, Peter J.; and Dolan, Michael J., 4,395,325, Cl. 208-113.000.
Owl, George A., Jr., to Rockwell International Corporation. Actuation system for a control surface of an aircraft. 4,395,007, Cl. 244-215.000.
Oy Tampella AB: *See*—
Mijala, Ari A. M., 4,394,977, Cl. 241-21.000.
Oyamada, Yoshinori: *See*—
Toyama, Noboru; and Oyamada, Yoshinori, 4,395,243, Cl. 445-6.000.
Pacifici, James G.; Newland, Gordon C.; and Moore, Howard G., to Eastman Kodak Company. Amorphous aromatic polyester modified with amine and UV curable composition containing the same. 4,395,539, Cl. 528-291.000.
Paivanas, John A.: *See*—
DeRobertis, Ignatius J.; Hassan, Javathu K.; Judge, Robert L.; and Paivanas, John A., 4,395,165, Cl. 406-88.000.
Pako Corporation: *See*—
Adams, Daniel O.; and Beckman, Gregg S., 4,395,144, Cl. 400-30.000.

Palomar Systems & Machines, Inc.: *See*—
Braden, Denver, 4,395,184, Cl. 414-417.000.

Pampouchidis, Georgios: *See*—
Honig, Helmut; and Pampouchidis, Georgios, 4,395,502, Cl. 523-415.000.

Panandiker, K. A. Pai; and Danick, Charles, to Cargill, Incorporated. Coating powders for protective films based on epsilon-caprolactam blocked isocyanates. 4,395,529, Cl. 528-45.000.

Panchanathan, Viswanathan; Ray, Ranjan; and Giessen, Bill C., to Marko Materials, Inc. Copper base alloys made using rapidly solidified powders and method. 4,395,464, Cl. 428-546.000.

Papadopoulos, Kimon: *See*—
Rizzelli, Frank D.; and Papadopoulos, Kimon, 4,395,432, Cl. 427-34.000.

Paper Converting Machine Company: *See*—
Campbell, James F., 4,394,898, Cl. 198-374.000.

Parekh, Rajesh H. Segmented channel field effect transistors. 4,395,725, Cl. 357-23.000.

Park, Chung P., to Dow Chemical Co., The. Novel olefin polymer compositions and foamed articles prepared therefrom having improved elevated temperature dimensional stability. 4,395,510, Cl. 524-230.000.

Parker, John A.: *See*—
Varma, Indra K.; Fohlen, George M.; and Parker, John A., 4,395,557, Cl. 548-413.000.

Parker, Randall W. Timing control apparatus and circuit. 4,395,621, Cl. 219-492.000.

Parras, Karl-Heinz, to TE KA DE Felten & Guilleaume Fernmeldeanlagen GmbH. Two-terminal-pair network simulating an inductance. 4,395,690, Cl. 333-214.000.

Paschke, Werner: *See*—
Sauer, Rudolf; Kienzle, Wolfgang; Paschke, Werner; and Hans, Waldemar, 4,394,973, Cl. 239-467.000.

Patel, Nandlal P.; and Dolida, Roger J., to Union Carbide Corporation. Cryogenic liquid storage container having an improved access conduit. 4,394,929, Cl. 220-421.000.

Patel, Suman D.: *See*—
Goldie, Harry; and Patel, Suman D., 4,395,684, Cl. 333-13.000.

Patterson, Howard F. Bonding process for securing objects to a smooth surface. 4,395,297, Cl. 156-64.000.

Patton, Charles R., III; and Lippincott, Douglas E. Artwork generation apparatus and process for charts. 4,395,116, Cl. 355-32.000.

Paul Wurth S.A.: *See*—
Ulveling, Leon, 4,395,166, Cl. 406-124.000.

Paulus, Philippe A.; and Economopoulos, Marios, to Centre de Recherches Metallurgiques-Centum voor Research in de Metallurgie. Method of and apparatus for controlled cooling of metallurgical products. 4,395,022, Cl. 266-106.000.

Paulus, Wilfried; and Genth, Hermann, to Bayer Aktiengesellschaft. Microbicidal agent and its use. 4,395,274, Cl. 71-67.000.

Pav, Josef; and Munch, Erhard, to Kleinewefers GmbH. Roll for use in calenders or the like. 4,394,793, Cl. 29-116.0AD.

Pawson, Beverly A.: *See*—
Chan, Ka-Kong; and Pawson, Beverly A., 4,395,575, Cl. 568-442.000.

Payne, Guy D., to Outboard Marine Corporation. Outboard motor mounting means affording upward tilting without travel of the motor forwardly of the boat transom. 4,395,238, Cl. 440-53.000.

Peake, Steven L.: *See*—
Raghu, Sivaraman; Farina, James S.; and Peake, Steven L., 4,395,547, Cl. 544-184.000.

Pedroia, Luigi. Mechanism for causing the rotation of the spool in a machine for tying a knot. 4,394,987, Cl. 242-46.200.

Pelrine, Bruce P., to Mobil Oil Corporation. Hydrotreating process. 4,395,327, Cl. 208-216.00R.

Pelta, Edmond R., to EMC Corporation. Linearizing circuit for meter displays. 4,395,678, Cl. 324-132.000.

Penn Engineering & Manufacturing Corp.: *See*—
Dise, Ronald S., 4,395,641, Cl. 307-116.000.

Pennwalt Corporation: *See*—
Goltz, Kurt; and West, William T., 4,395,387, Cl. 423-305.000.

Penzien, Klaus: *See*—
Naarmann, Herbert; Naegele, Dieter; Penzien, Klaus; and Schlag, Johannes, 4,395,497, Cl. 523-135.000.

Perkin-Elmer Corporation, The: *See*—
Russo, Albert J., 4,395,091, Cl. 350-319.000.

Perkins, Patrick D.: *See*—
Chang, Clarence D.; and Perkins, Patrick D., 4,395,554, Cl. 546-250.000.

Perlstein, Jerome H.: *See*—
Noonan, John M.; and Perlstein, Jerome H., 4,395,475, Cl. 430-69.000.

Pernyeszi, Joseph, to International Telephone and Telegraph Corporation. Mosfet logic inverter buffer circuit for integrated circuits. 4,395,645, Cl. 307-450.000.

Perreud, Raymond J., to Societe d'Etude et de Construction de Machines pour Toutes Industries S.E.C.O.M.A. S.A. Mining appliance. 4,395,163, Cl. 405-303.000.

Perry, Thomas J.: *See*—
Comfort, Joseph A.; Perry, Thomas J.; and Loos, Michel, 4,395,753, Cl. 364-200.000.

Peters, Karl-Clemens: *See*—
Nieberle, Juergen; Peters, Karl-Clemens; Reuther, Wolfgang; and Bankowsky, Heinz-Hilmar, 4,395,535, Cl. 528-137.000.

Petersdorf, Roland W., to Chrysler Corporation. Hall Effect tester for heated window grids. 4,395,677, Cl. 324-117.00H.

Peterson, Oscar F. A. Dispenser for fluent materials. 4,394,940, Cl. 222-276.000.

Petocz, Lujza: *See*—
Budai, Zoltan; Lay nee Konya, Aranka; Mezei, Tibor; Petocz, Lujza; Grasser, Katalin; Kosoczky, Ibolya; Szirt nee Kiszelly, Eniko; and Gorog, Peter, 4,395,413, Cl. 424-250.000.

Petroleum Fermentations N.V.: *See*—
Gutnick, David L.; Rosenberg, Eugene; Belsky, Igal; and Zinaida, Zosim, 4,395,353, Cl. 252-356.000.
Gutnick, David L.; Rosenberg, Eugene; Belsky, Igal; and Zinaida, Zosim, 4,395,354, Cl. 252-356.000.

Petrolite Corporation: *See*—
Tait, William S.; Martin, Richard L.; and Rodgers, Richard A., 4,395,318, Cl. 204-404.000.

Pfeiffer, Francis R., to SmithKline Beckman Corporation. Renally active dipeptides. 4,395,401, Cl. 424-177.000.

Pfeiffer, Heinrich; Mutzel, Wolfgang; and Speck, Ulrich, to Schering Aktiengesellschaft. Unsymmetrically substituted dicarboxylic-acid-bis-(2,4,6-triiodo-anilides), their preparation, and x-ray contrast media containing same. 4,395,391, Cl. 424-5.000.

Pfizer Inc.: *See*—
Wolff, John S., III; Hemsworth, George R.; and Jensen, Keith E., 4,395,394, Cl. 424-88.000.

Philapitsch, Anton: *See*—
Eibl, Johann; Schwarz, Otto; Elsinger, Fritz; and Philapitsch, Anton, 4,395,396, Cl. 424-101.000.

Philip, Morris. Splash-proof container and cover. 4,394,928, Cl. 220-366.000.

Philippides, Constantinos; and Zinger, William H., to United States of America, Navy. Apparatus for identifying coded information without internal clock synchronization. 4,395,773, Cl. 375-116.000.

Phillips, Martha E.; and Dudik, Roger A. Geodesic dome connector. 4,395,154, Cl. 403-172.000.

Phillips Petroleum Company: *See*—
Blackwell, Jennings P.; Tieszen, Dale O.; and Scruggs, Jack G., 4,395,509, Cl. 524-127.000.

Phipps, Arthur L.; and Stoyanov, Ben, to U.C. Industries. Foam extrusion apparatus having downstream upper and lower hinged shaping means and side restraining means. 4,395,214, Cl. 425-214.000.

Pierce, Benjamin J.: *See*—
Dekeyser, Mark A.; Pierce, Benjamin J.; Moore, Richard C.; and Hubbard, Winchester L., 4,395,551, Cl. 544-282.000.

Pierce, O. Leon; Smith, Mark C.; and Driver, R. Byron, to Universal Data Systems, Inc. Line powered modem. 4,395,590, Cl. 179-2.0DP.

Piestert, Gerhard: *See*—
Bauer, Herbert; Piestert, Gerhard; and Gilch, Heinz G., 4,395,301, Cl. 156-307.500.

Pietsch, Gunter; Walter, Gerhard; Mewes, Gunter; and Schrader, Gert, to Howaldtswerke Deutsche Werft Aktiengesellschaft Hamburg und Kiel. Bearing and seal assembly for stern tubes of vessels. 4,395,141, Cl. 384-147.000.

Pinchemaille, Pierre, to Line S.A. Tool magazine for automatic tool-changing device. 4,394,908, Cl. 211-1.500.

Pinchon, Philippe: *See*—
Ecomard, Andre; and Pinchon, Philippe, 4,394,964, Cl. 239-90.000.

Pinto, Akiva: *See*—
Keller, Alex J.; and Pinto, Akiva, 4,394,790, Cl. 19-105.000.

Pioneer Electronic Corporation: *See*—
Sunaga, Yoshimitsu; Kamiura, Toshio; and Honda, Satoru, 4,395,743, Cl. 360-90.000.
Takeda, Shigeki; Shibata, Junichi; Shimakata, Masashi; Oshime, Yasuhiro; Gomi, Shintaro; and Kawamura, Katsuaki, 4,395,714, Cl. 343-725.000.

Piosenka, Gerald V., to Motorola Inc. Precision digital random data generator. 4,395,703, Cl. 340-347.0AD.

Pitney Bowes Inc.: *See*—
Branecky, George N.; Roetter, Frank T.; and Oeschger, Frank A., 4,395,255, Cl. 493-439.000.
Daniels, Edward P., 4,395,756, Cl. 364-200.000.

Pizzuti, Donato F., to Polaroid Corporation. Bellows for folding camera. 4,395,102, Cl. 354-187.000.

Plautz, John R. Turbine shroud honeycomb matrix mechanical locking structure and method. 4,395,196, Cl. 415-174.000.

Pleskac, Karel: *See*—
Hruby, Jan; and Pleskac, Karel, 4,394,988, Cl. 242-47.120.

Pless, Janos: *See*—
Bauer, Wilfried; and Pless, Janos, 4,395,403, Cl. 424-177.000.

Plessey Overseas Limited: *See*—
Davies, Arthur B. C.; and Norris, Andrew P., 4,395,685, Cl. 333-125.000.

Plicon Corporation: *See*—
Raines, Charles D.; and Williams, Earl W., 4,394,955, Cl. 229-65.000.

Podell, Allen F., to Cuisinarts, Inc. Hybrid electrical braking method and system for tool equipment having induction motor drives. 4,395,670, Cl. 318-758.000.

Polar Bear, Inc.: *See*—
Hight, Rayburn M.; and Corrick, Paul M., 4,394,984, Cl. 241-278.00R.

Polaroid Corporation: *See*—
Killian, John C., Jr., 4,395,748, Cl. 362-8.000.
Pizzuti, Donato F., 4,395,102, Cl. 354-187.000.

Polcyn, Erwin R., to Motorola Inc. Multiple use component spacer and methods for preparing a spacer for mounting on and affixing a spacer to a circuit board. 4,395,585, Cl. 174-138.00G.

Polmanteer, Keith E., to Dow Corning Corporation. Fluoroelastomer coated silicone rubber. 4,395,462, Cl. 428-420.000.
Polsam, Inc.: *See*—
Goldstein, Samuel A., 4,394,803, Cl. 36-51.000.
Polysar Limited: *See*—
Briggs, George J.; and Wei, Yung-Kang, 4,395,501, Cl. 523-351.000.
Pomfret, Colin T.: *See*—
Greier, Josef; and Pomfret, Colin T., 4,394,851, Cl. 123-182.000.
Pommer, Ernst-Heinrich: *See*—
Hagen, Helmut; Ziegler, Hans; Mappes, Celia J.; and Pommer, Ernst-Heinrich, 4,395,415, Cl. 424-263.000.
Portage Electric Products, Inc.: *See*—
Wehl, Glenn E., 4,395,694, Cl. 337-112.000.
Porter, Frederic E.; and Scott, James M., to Sandoz Ltd. Seed coating apparatus. 4,394,845, Cl. 118-303.000.
Portz, Willi: *See*—
Braun, Albert; Portz, Willi; Strauss, Georg; and Delhey, Hans-Martin, 4,395,282, Cl. 75-58.000.
Potter, James C., to Lucas Industries PLC. Fuel injection nozzles. 4,394,972, Cl. 239-453.000.
Poveromo, George A. Boat trailer lamp and license plate support. 4,395,749, Cl. 362-83.000.
Poynton, Corbett J., to Allied Eneabba Limited. Process for treating zircon. 4,395,384, Cl. 423-1.000.
PPG Industries, Inc.: *See*—
Das, Suryya K.; and Kania, Charles M., 4,395,444, Cl. 427-388.400.
Kunkle, Gerald E.; Sensi, John E.; and Gulotta, Joseph A., 4,395,272, Cl. 65-99.500.
Prasad, Keni K.; and Hayes, Eugene G., to Deere & Company. Variable speed drive clutch. 4,395,249, Cl. 474-93.000.
Pratt, Harry H., deceased (by Pratt, Mary D., executrix); and Gill, William J., to Foster Wheeler Energy Corporation. Vapor generator having drainable tube bends around burner openings extending through furnace boundary walls formed in part by angularly extending fluid flow tubes. 4,394,849, Cl. 122-235.00K.
Pratt, Mary D., executrix: *See*—
Pratt, Harry H., deceased; and Gill, William J., 4,394,849, Cl. 122-235.00K.
Prestele, Karl; Franetzki, Manfred; and Reif, Erich, to Siemens Aktiengesellschaft. Device for the infusion of fluids into the human or animal body. 4,395,259, Cl. 604-67.000.
Privat, Albert, to Creusot-Loire. Telescopic cranes. 4,394,914, Cl. 212-203.000.
Proco, Inc.: *See*—
Rash, Curtis W., 4,395,052, Cl. 280-5.00C.
Procter & Gamble Company, The: *See*—
Bishop, Delmar J., 4,395,215, Cl. 425-290.000.
Crawford, Robert J., 4,395,363, Cl. 252-526.000.
Eickhoff, David J.; and Robbins, Medford D., 4,395,361, Cl. 252-431.00C.
Strauss, Daniel L., 4,395,342, Cl. 252-8.750.
Puncoch, Miloslav: *See*—
Deviny, James E.; and Puncoch, Miloslav, 4,395,000, Cl. 244-118.300.
Purdue Frederick Company, The: *See*—
Shetty, Bola V.; and Airey, John E., 4,395,552, Cl. 546-118.000.
Purdum, William R., to Monsanto Company. Mono and diesters of N-phosphonomethylglycinates as herbicides. 4,395,275, Cl. 71-87.000.
Purucker, Berndhard: *See*—
Leutner, Bernd; Purucker, Berndhard; Rother, Eberhard; Juergens, Geerd F.; and Wagner, Dieter, 4,395,273, Cl. 71-11.000.
Quehen, Daniel J.: *See*—
Dauge, Gilbert V.; Langlais, Jacques F.; and Quehen, Daniel J., 4,394,885, Cl. 177-210.00C.
Quest, Karl: *See*—
Ciongwa, Joachim; Heckmann, Werner; Jendrichowski, Klaus; Quest, Karl; Ruppell, Christian; and Sushardt, Wolfgang, 4,394,867, Cl. 134-104.000.
Quick, Leonard M.: *See*—
Hensley, Albert L., Jr.; and Quick, Leonard M., 4,395,328, Cl. 208-251.00H.
R. Alkan & Cie: *See*—
Coutin, Pierre F., 4,395,003, Cl. 244-137.00R.
R. B. Industries: *See*—
Rice, Verle L.; and Check, Dwight E., 4,394,878, Cl. 144-131.000.
Racal-Dana Instruments Limited: *See*—
Connell, Peter P.; and Morgan, Malcolm F., 4,395,683, Cl. 331-2.000.
Radt, Walter: *See*—
Oeckl, Siegfried; Zahl, Gero; and Radt, Walter, 4,395,371, Cl. 260-464.000.
Rae, Rory, to Deere & Company. Hydraulically operated push-off manure spreader. 4,394,976, Cl. 239-679.000.
Raghu, Sivaraman; Farina, James S.; and Peake, Steven L., to American Cyanamid Co. Process for preparing 1-substituted-6-n-propyl-8-methylimidazo[1,5-d]-as-triazin-4(3H)-ones. 4,395,547, Cl. 544-184.000.
Raines, Charles D.; and Williams, Earl W., to Plicon Corporation. Bag with bendable retainer strip, and method of making the same. 4,394,955, Cl. 229-65.000.
Ramsden, Paul N.; and Groves, Michael H., to Stanley Tools Limited. Photoelectric measuring ruler including fault detection apparatus. 4,395,630, Cl. 250-237.00G.
Rance, Frederick K. Support for a mailbox. 4,395,012, Cl. 248-545.000.
Randall, Alfred R.: *See*—
Bakken, Gordon J.; Randall, Alfred R.; and Bodily, Richard W., 4,395,143, Cl. 384-221.000.
Randwal Instrument Co., Inc.: *See*—
Remijan, Paul W., 4,395,124, Cl. 356-373.000.
Rapp, Adolph K., to National Semiconductor Corporation. Low power CMOS frequency divider. 4,395,774, Cl. 377-114.000.
Rapp, Erich: *See*—
Eistetter, Klaus; Rapp, Erich; and Wolf, Horst, 4,395,414, Cl. 424-258.000.
Rash, Curtis W., to Proco, Inc. Uranium slurry hauling system. 4,395,052, Cl. 280-5.00C.
Rathje, Uwe; and Lappe, Manfred, to O&K Orenstein & Koppel Aktiengesellschaft. Steering gear with steering-arm lever. 4,394,886, Cl. 180-140.000.
Rauch, Hubert: *See*—
Dinklage, Horst; Fink, Herbert; Frank, Peter; Rauch, Hubert; and Siol, Werner, 4,395,515, Cl. 524-832.000.
Raupach, Gerhard: *See*—
Kopke, Wolfgang; Muller, Manfred; Schmidt, Wolfgang; Eggert, Albert; Gahleitner, Erwin; and Raupach, Gerhard, 4,395,601, Cl. 179-179.000.
Ray, Ranjan: *See*—
Panchanathan, Viswanathan; Ray, Ranjan; and Giessen, Bill C., 4,395,464, Cl. 428-546.000.
Razumowski, Bernard: *See*—
Limare, Armand; Razumowski, Bernard; and Sindezingue, Claude, 4,395,291, Cl. 106-297.000.
RCA Corporation: *See*—
Belohoubek, Erwin F., 4,395,687, Cl. 333-164.000.
Ganssle, Eugene R.; and Samhammer, Nelson F., 4,395,004, Cl. 244-158.00R.
Ganssle, Eugene R., 4,395,005, Cl. 244-161.000.
Hedlund, Lee V.; and Herzog, Donald G., 4,395,738, Cl. 358-335.000.
Holmes, David D., 4,395,735, Cl. 358-198.000.
Kern, Werner; and Schnable, George L., 4,395,304, Cl. 156-657.000.
Lewis, Henry G., Jr., 4,395,729, Cl. 358-21.00R.
Liller, Paul R.; and Shahan, Donald J., 4,395,242, Cl. 445-5.000.
Ruda, Joseph C.; Wartzok, Richard E.; and Wedekind, Robert J., 4,394,951, Cl. 226-118.000.
Southgate, Peter D.; and Gorog, Istvan, 4,395,122, Cl. 356-237.000.
Vossen, John L., Jr.; and Zelez, Joseph, 4,395,467, Cl. 428-697.000.
Wharton, James H.; and James, Jack E., 4,395,737, Cl. 358-312.000.
Reardon, Margaret. Cake mold. 4,395,015, Cl. 249-115.000.
Rech, Jakob, to Applefield, Jerome; and Applefield, Sheldon. Valved closure for dispensing container. 4,394,944, Cl. 222-553.000.
Recine, Giuseppe, to Shannon, Thomas L., Jr. Fluid dispenser. 4,394,941, Cl. 222-355.000.
Rees, Douglas, to Res-Del Group Ltd. Perfusion chamber. 4,395,492, Cl. 435-283.000.
Regie Nationale des Usines Renault: *See*—
Bellot, Dominique; and Barre, Michel, 4,395,064, Cl. 292-201.000.
Reif, Erich: *See*—
Prestele, Karl; Franetzki, Manfred; and Reif, Erich, 4,395,259, Cl. 604-67.000.
Reilly, Charles; and Bailey, Richard G. Fuel pellets. 4,395,265, Cl. 44-15.00R.
Reinecke, Rolf: *See*—
Lohr, Gernot; and Reinecke, Rolf, 4,395,500, Cl. 523-221.000.
Rembges, Wolfgang; and Elwart, Jan G., to Klockner Ionon GmbH. Apparatus for hardening metallic workpieces including furnace and workpiece transport structure, a part of which can remain in the furnace during furnace operation. 4,395,024, Cl. 266-252.000.
Remijan, Paul W., to Randwal Instrument Co., Inc. Apparatus for position encoding. 4,395,124, Cl. 356-373.000.
Remillard, Jean M. Apparatus for making and maintaining an ice surface. 4,394,817, Cl. 62-235.000.
Rempfler, Hermann: *See*—
Bohner, Beat; and Rempfler, Hermann, 4,395,277, Cl. 71-94.000.
Repa Feinstanzwerk GmbH: *See*—
Fohl, Artur, 4,394,992, Cl. 242-85.000.
Res-Del Group Ltd.: *See*—
Rees, Douglas, 4,395,492, Cl. 435-283.000.
Research Corporation: *See*—
Hall, Iris; Cocolas, George; and Chapman, James M., Jr., 4,395,417, Cl. 424-270.000.
Hughes, Howard C., 4,394,866, Cl. 128-785.000.
Research-Cottrell, Inc.: *See*—
Lefevre, Marcel R.; and DePalma, Anthony M., 4,395,448, Cl. 428-99.000.
Reuther, Wolfgang: *See*—
Nieberle, Juergen; Peters, Karl-Clemens; Reuther, Wolfgang; and Bankowsky, Heinz-Hilmar, 4,395,535, Cl. 528-137.000.
Rexnord Inc.: *See*—
Carlson, Dennis L., 4,395,245, Cl. 464-49.000.
Reynolds, Gordon S.: *See*—
Todd, Robert J.; and Reynolds, Gordon S., 4,395,260, Cl. 604-122.000.
Reynolds, William A. Method of repairing damaged keyway. 4,394,879, Cl. 164-76.100.
Rhone-Poulenc Industries: *See*—
Campagne, Jean-Claude; and Frappier, Guy, 4,395,429, Cl. 426-271.000.

Rice, Verle L.; and Check, Dwight E., to R. B. Industries. Combination planar molder. 4,394,878, Cl. 144-131.000.
Richardson, Eric K.: *See*—
Ginniff, Maurice E.; and Richardson, Eric K., 4,394,895, Cl. 198-339.000.
Richardson, Ralph E.: *See*—
Dargel, William O.; Lougheed, Robert M.; McCubbrey, David L.; and Richardson, Ralph E., 4,395,697, Cl. 382-41.000.
McCubbrey, David L.; and Richardson, Ralph E., 4,395,700, Cl. 382-27.000.
Sternberg, Stanley R.; Dargel, William O.; Lougheed, Robert M.; McCubbrey, David L.; and Richardson, Ralph E., 4,395,698, Cl. 382-27.000.
Ricoh Company, Ltd.: *See*—
Horike, Masanori; and Ebi, Yutaka, 4,395,717, Cl. 346-75.000.
Sugiyama, Hiroaki, 4,394,923, Cl. 215-329.000.
Rieger, Franz: *See*—
Latsch, Reinhard; Linder, Ernst; Maurer, Helmut; Muller, Klaus; and Rieger, Franz, 4,394,855, Cl. 123-254.000.
Ries, Gunter, to Siemens Aktiengesellschaft. Cable shaped cryogenically cooled stabilized superconductor. 4,395,584, Cl. 174-15.00S.
Rieter Machine Works Limited: *See*—
Graf, Felix; and Wirz, Armin, 4,394,985, Cl. 242-18.0DD.
Rieth, Alois: *See*—
Scheidemann, Hans; Rieth, Alois; Sebralla, Bruno; and Wohlfart, Walter, 4,395,750, Cl. 362-239.000.
Riggs, Dennis M.; and Harvey, Edward L., to United States of America, Army. Bonded bulk graphite and process for bonding. 4,395,299, Cl. 156-285.000.
Rinnai Kabushiki Kaisha: *See*—
Nakanishi, Masakatsu; and Nomura, Toshiyuki, 4,395,226, Cl. 431-76.000.
Ripart, Guy: *See*—
Nory, Pierre; and Ripart, Guy, 4,395,121, Cl. 356-152.000.
Rissel, Eva-Maria: *See*—
Birkle, Siegfried; Rubner, Roland; Hauschildt, Hans; and Rissel, Eva-Maria, 4,395,481, Cl. 430-326.000.
Ritter, Don F.; St. Clair, Jack A.; and Togami, Henry K., to United States of America, Energy. Continuous chain bit with downhole cycling capability. 4,394,882, Cl. 175-89.000.
Rizzelli, Frank D.; and Papadopoulos, Kimon, to Westinghouse Electric Corp. β-Alumina coating. 4,395,432, Cl. 427-34.000.
RMI Corporation: *See*—
Damiano, Paul J., 4,394,830, Cl. 84-1.150.
Roach, Thomas L.: *See*—
Barker, Thomas H.; and Roach, Thomas L., 4,395,626, Cl. 235-381.000.
Barker, Thomas H.; Roach, Thomas L.; Kruse, Richard H.; Fayer, Jay A.; and Bohlman, Eric O., 4,395,627, Cl. 235-381.000.
Robbins, Medford D.: *See*—
Eickhoff, David J.; and Robbins, Medford D., 4,395,361, Cl. 252-431.00C.
Robert Bosch GmbH: *See*—
Hofmann, Karl; Seifert, Kurt; and Jungbauer, Josef, 4,394,970, Cl. 239-453.000.
Kopke, Wolfgang; Muller, Manfred; Schmidt, Wolfgang; Eggert, Albert; Gahleitner, Erwin; and Raupach, Gerhard, 4,395,601, Cl. 179-179.000.
Kopse, Odon; and Amaya, Nestor R., 4,394,823, Cl. 73-119.00A.
Kurz, Wolfgang, 4,395,673, Cl. 320-61.000.
Latsch, Reinhard; Linder, Ernst; Maurer, Helmut; Muller, Klaus; and Rieger, Franz, 4,394,855, Cl. 123-254.000.
Lehmann, Klaus, 4,395,643, Cl. 307-264.000.
Sauer, Rudolf; Kienzle, Wolfgang; Paschke, Werner; and Hans, Waldemar, 4,394,973, Cl. 239-467.000.
Thome, Ludwig; Wanner, Karl; and Bretthauer, Karlheinz, 4,395,649, Cl. 310-15.000.
Robert S. Agar, Inc.: *See*—
Thorsell, Stanley E., 4,394,808, Cl. 52-483.000.
Roberts, Derek A., to Rolls-Royce Limited. Shaft coupling. 4,395,247, Cl. 464-158.000.
Roberts, James R.; McIlrath, Thomas J.; and Lucatorto, Thomas B. Optical devices utilizing multicapillary arrays. 4,395,775, Cl. 378-145.000.
Roberts, Ronald F.: *See*—
Hobbins, Norris D.; and Roberts, Ronald F., 4,395,294, Cl. 148-6.14R.
Robertson Paper Box Co., Inc.: *See*—
Hackenberg, Robert A., 4,394,905, Cl. 206-486.000.
Robichaud, Bernard J.: *See*—
Gruber, Damie C.; and Robichaud, Bernard J., 4,395,031, Cl. 270-54.000.
Robillard, Jean J. Plain paper reproduction process. 4,395,472, Cl. 430-47.000.
Robin, Peter D. L., to Spanset Inter A.G. Lifting assembly. 4,395,067, Cl. 294-74.000.
Rockwell International Corporation: *See*—
Owl, George A., Jr., 4,395,007, Cl. 244-215.000.
Rodgers, Richard A.: *See*—
Tait, William S.; Martin, Richard L.; and Rodgers, Richard A., 4,395,318, Cl. 204-404.000.
Roels, Oswald A. Culture of marine species. 4,394,846, Cl. 119-2.000.
Roetter, Frank T.: *See*—
Branecky, George N.; Roetter, Frank T.; and Oeschger, Frank A., 4,395,255, Cl. 493-439.000.
Rohm GmbH: *See*—
Dinklage, Horst; Fink, Herbert; Frank, Peter; Rauch, Hubert; and Siol, Werner, 4,395,515, Cl. 524-832.000.
Rohm, Gunter H. Chuck key. 4,395,171, Cl. 408-241.00R.
Rohm and Haas Company: *See*—
Emmons, William D.; and Stevens, Travis E., 4,395,524, Cl. 526-307.200.
Lewis, Sheldon N.; and Levy, Jerome F., 4,395,569, Cl. 560-222.000.
Swithenbank, Colin, 4,395,570, Cl. 562-435.000.
Rohn, Martin: *See*—
Karuks, Ergo; and Rohn, Martin, 4,395,159, Cl. 405-172.000.
Rohrmann, Charles A.; and Wick, Oswald J. Process for treating fission waste. 4,395,367, Cl. 252-629.000.
Roinestad, Gerald C., to Ashworth Bros., Inc. Modular plastic conveyor belt. 4,394,901, Cl. 198-850.000.
Rolls-Royce Limited: *See*—
Roberts, Derek A., 4,395,247, Cl. 464-158.000.
Romano, Ugo; Fornasari, Giancarlo; and Di Gioacchino, Sandro, to Anic S.p.A. Preparing aromatic urethans. 4,395,565, Cl. 560-24.000.
Romig, Alan D.: *See*—
Tuckey, Charles H.; and Romig, Alan D., 4,394,852, Cl. 123-187.50R.
Rosenberg, Eugene: *See*—
Gutnick, David L.; Rosenberg, Eugene; Belsky, Igal; and Zinaida, Zosim, 4,395,353, Cl. 252-356.000.
Gutnick, David L.; Rosenberg, Eugene; Belsky, Igal; and Zinaida, Zosim, 4,395,354, Cl. 252-356.000.
Rosenbrock, Richard: *See*—
Whitney, John A.; and Rosenbrock, Richard, 4,394,958, Cl. 236-49.000.
Rosendahl, Gottfried R.; and Dykes, Wiley V., to United States of America, Navy. Lens system for panoramic imagery. 4,395,093, Cl. 350-441.000.
Rosenski, Josephine M.; and Fernandez, Joseph M., to National Starch And Chemical Corporation. High strength pigment binders for paper coatings containing carboxylated vinyl ester alkyl acrylic interpolymers. 4,395,499, Cl. 523-206.000.
Rosh, Donald M. Method of testing fluid flow condition in extension of a pipe. 4,395,380, Cl. 376-247.000.
Ross, Alexander R.: *See*—
Moffitt, Bryan S.; and Ross, Alexander R., 4,395,765, Cl. 365-174.000.
Ross, Rudi; and Heimel, Helmut, to Leybold Heracus GmbH. Cuvette for optical gas-analysis apparatus. 4,395,632, Cl. 250-343.000.
Rossi, Paula J.: *See*—
McCreery, Richard L.; McCurdy, Clyde W.; and Rossi, Paula J., 4,395,312, Cl. 204-1.00T.
Rostovtseva, Larisa I.: *See*—
Ovchinnikov, Jury A.; Ivanov, Vadim T.; Rostovtseva, Larisa I.; Andronova, Tatyana M.; Sorokina, Irina B.; and Malkova, Veronika P., 4,395,399, Cl. 424-177.000.
Rotek Incorporated: *See*—
Sable, Harvey J., 4,395,140, Cl. 384-99.000.
Roth, Adrian W., to Sprecher & Schuh AG. Gas blast switch. 4,395,607, Cl. 200-148.00R.
Rother, Eberhard: *See*—
Leutner, Bernd; Purucker, Berndhard; Rother, Eberhard; Juergens, Geerd F.; and Wagner, Dieter, 4,395,273, Cl. 71-11.000.
Roussel Uclaf: *See*—
Torelli, Vesperto; Deraedt, Roger; and Nedelec, Lucien, 4,395,408, Cl. 424-238.000.
Rowe, Delton J. Drive-through pit production of ethanol. 4,395,488, Cl. 435-161.000.
Rowton, Billy L. Method and system for dewatering reserve pits. 4,395,338, Cl. 210-747.000.
Rubner, Roland: *See*—
Ahne, Hellmut; Kuhn, Eberhard; and Rubner, Roland, 4,395,482, Cl. 430-326.000.
Birkle, Siegfried; Rubner, Roland; Hauschildt, Hans; and Rissel, Eva-Maria, 4,395,481, Cl. 430-326.000.
Ruckdeschel, Frederick R.: *See*—
Hauser, Oscar G.; and Ruckdeschel, Frederick R., 4,395,471, Cl. 430-45.000.
Ruda, Joseph C.; Wartzok, Richard E.; and Wedekind, Robert J., to RCA Corporation. Active tape storage bin. 4,394,951, Cl. 226-118.000.
Rudi, Guttorm: *See*—
Helgeland, Olav; Rudi, Guttorm; and Engely, Odd, 4,395,010, Cl. 248-371.000.
Rumble, Clive S. Obturator. 4,395,082, Cl. 339-41.000.
Rump, Egon; and Franzen, Wolfgang, to Ford Motor Company. Fuel tank-filler pipe particularly for motor vehicles. 4,394,925, Cl. 220-86.00R.
Ruppell, Christian: *See*—
Ciongwa, Joachim; Heckmann, Werner; Jendrichowski, Klaus; Quest, Karl; Ruppell, Christian; and Suthardt, Wolfgang, 4,394,867, Cl. 134-104.000.
Russell, Thomas H., III. Foldable posting board assembly. 4,395,059, Cl. 282-29.00B.
Russo, Albert J., to Perkin-Elmer Corporation, The. Optical coupling device for use with a plasma emission spectrometer. 4,395,091, Cl. 350-319.000.
Ryan, Charles W., to Eli Lilly and Company. Preparation of 6a,10a-trans-hexahydrodibenzopyranones. 4,395,560, Cl. 549-391.000.

Ryco Graphic Manufacturing, Inc.: *See*—
Switall, Thomas G., 4,394,873, Cl. 137-613.000.
Rypkema, Jouke N., to Zenith Radio Corporation. Remote muting for CATV/STV converters. 4,395,734, Cl. 358-194.100.
S.I.C.A. Serrande.Infissi.Carpenteria.Attrezzatura S.p.A.: *See*—
Ermes, Neri, 4,395,218, Cl. 425-392.000.
SAB NIFE Aktiebolag: *See*—
Bring, Karl-Birger, 4,395,639, Cl. 307-66.000.
Sable, Harvey J., to Rotek Incorporated. Bearing mounting with hydraulic fastening means for cranes and the like. 4,395,140, Cl. 384-99.000.
Sabre, Daniel R. Bearing design for drill bit. 4,395,076, Cl. 384-92.000.
Sado, Ichiro: *See*—
Kishimoto, Juji; Sado, Ichiro; and Cho, Mitsuo, 4,395,704, Cl. 340-365.00S.
Saikawa, Isamu; Takano, Shuntaro; Imaizumi, Hiroyuki; Takakura, Isamu; Ochiai, Hirokazu; Yasuda, Takashi; Taki, Hideo; Tai, Masaru; and Kodama, Yutaka, to Toyama Chemical Co., Ltd. 7α-Methoxycephalosporins. 4,395,412, Cl. 424-246.000.
St. Clair, Jack A.: *See*—
Ritter, Don F.; St. Clair, Jack A.; and Togami, Henry K., 4,394,882, Cl. 175-89.000.
St. Clair, Terry L.; Wolfe, James F.; and Greenwood, Thomas D., to United States of America, National Aeronautics and Space Administration. Thermoset-thermoplastic aromatic polyamide containing N-propargyl groups. 4,395,540, Cl. 528-345.000.
Saint Gobain Vitrage: *See*—
Dran, Maurice; and Jamet, Bernard, 4,395,622, Cl. 219-522.000.
St. John, John: *See*—
MacPhee, John; Wirth, David; and St. John, John, 4,394,870, Cl. 137-99.000.
St. John, Michael R., to Institute of Gas Technology. Hydrogen production by biomass product depolarized water electrolysis. 4,395,316, Cl. 204-129.000.
Saito, Masaaki; and Ota, Tadaki, to Nissan Motor Co., Ltd. Fuel injector valve. 4,394,974, Cl. 239-585.000.
Saito, Narimasa; and Horiuchi, Tatsuo, to Noda Institute for Scientific Research. Method for assay of α-amylase activity. 4,395,487, Cl. 435-22.000.
Saito, Sadayuki: *See*—
Tomizawa, Fumio; Sobata, Katsutoshi; Yoshimatsu, Yoshiaki; Saito, Sadayuki; Otani, Takashi; and Hirano, Senzaburo, 4,395,023, Cl. 266-158.000.
Saito, Takashi; Hirano, Toshio; and Kumaki, Takashi, to Victor Company of Japan, Ltd. Disc-shaped recording medium reproducing apparatus. 4,395,744, Cl. 360-97.000.
Saito, Toru, to Hitachi, Ltd. Reproduction method of filter demineralizer in condensate cleanup system of reactor. 4,395,335, Cl. 210-675.000.
Saitoh, Koichi, to Fuji Xerox Co., Ltd. Process of forming magnetic latent images. 4,395,470, Cl. 430-39.000.
Sakane, Kazuo: *See*—
Kamiya, Takashi; Teraji, Tsutomu; Nakai, Yoshiharu; Sakane, Kazuo; and Goto, Jiro, 4,395,411, Cl. 424-246.000.
Sakurai, Shigenori: *See*—
Torisu, Yoshio; Sakurai, Shigenori; Kamo, Takashi; and Furutani, Toshinobu, 4,395,319, Cl. 204-426.000.
Salathe, George F.: *See*—
Kaufman, Marvin L.; and Salathe, George F., 4,395,522, Cl. 525-524.000.
Salisbury, Winfield W., to Occidental Research Corporation. High density ion source. 4,395,631, Cl. 250-251.000.
Salmre, William: *See*—
Majewski, Henry A.; Salmre, William; and Van Brimer, R. Hugh, 4,395,719, Cl. 346-140.00R.
Samatsu, Yasuo: *See*—
Arikawa, Tetsuro; and Samatsu, Yasuo, 4,395,073, Cl. 303-116.000.
Samejima, Yasushi: *See*—
Iijima, Tokuzo; Samejima, Yasushi; Kishimoto, Kazuo; and Kono, Kimihiko, 4,395,321, Cl. 204-252.000.
Samhammer, Nelson F.: *See*—
Ganssle, Eugene R.; and Samhammer, Nelson F., 4,395,004, Cl. 244-158.00R.
Samson Efficiency B.V.: *See*—
Schimmel, Huibertus, 4,395,153, Cl. 402-15.000.
Sandberg, Richard J.: *See*—
Brownfield, Jerry A.; Sandberg, Richard J.; Niemi, Thomas J.; and Howland, Leland L., 4,394,818, Cl. 62-239.000.
Sanders Associates, Inc.: *See*—
Baer, Ralph H., 4,395,045, Cl. 273-312.000.
Sanders, James M.: *See*—
Klemarczyk, Philip T.; Sanders, James M.; Vock, Manfred H.; Vinals, Joaquin F.; Schmitt, Frederick L.; and Granda, Edward J., 4,395,366, Cl. 252-545.000.
Sandhaus, Jeffrey. Apparatus and method for effecting occlusion of the vas deferens. 4,394,864, Cl. 128-321.000.
Sandler, Louis M.; and Bristol, Robert G., to Emhart Industries, Inc. Control system and method for motor starting. 4,395,671, Cl. 318-786.000.
Sandow, Jurgen K.: *See*—
Konig, Wolfgang; Geiger, Rolf; and Sandow, Jurgen K., 4,395,400, Cl. 424-177.000.
Sandoz Ltd.: *See*—
Bauer, Wilfried; and Pless, Janos, 4,395,403, Cl. 424-177.000.
Egli, Robert, 4,395,544, Cl. 542-413.000.
Funfschilling, Peter, 4,395,550, Cl. 544-253.000.
Porter, Frederic E.; and Scott, James M., 4,394,845, Cl. 118-303.000.
Sands, Gilbert; and Jennens, Ian H., to Chloride Silent Power Limited. Methods of and apparatus for sintering tubular ceramic articles. 4,395,231, Cl. 432-11.000.
Sani-Fresh International, Inc.: *See*—
Frassanito, John R., 4,394,938, Cl. 222-207.000.
Sank, Victor J.: *See*—
Friauf, Walter S.; Brooks, Rodney A.; Sank, Victor J.; and Cascio, Horace E., 4,395,635, Cl. 250-366.000.
Sankyo Company Limited: *See*—
Ohki, Eiji; Oida, Sadao; Yoshida, Akira; Hayashi, Teruo; and Sugawara, Shinichi, 4,395,418, Cl. 424-270.000.
Sanpei, Hideo; Matsuno, Kunio; Hirano, Shyoji; and Kumagai, Katuya, to Tokyo Shibaura Denki Kabushiki Kaisha. Method for manufacturing information recording medium. 4,395,435, Cl. 427-38.000.
Santillan, Salvadore C.: *See*—
Downs, Robert F.; and Santillan, Salvadore C., 4,395,610, Cl. 200-292.000.
Sasaki, Kotaro: *See*—
Tanaka, Hiroto; Kohno, Yasumasa; Tanaka, Hideyuki; and Sasaki, Kotaro, 4,395,746, Cl. 361-143.000.
Sasaki, Kou: *See*—
Tanaka, Yoshiharu; Watanabe, Yoshiaki; and Sasaki, Kou, 4,394,813, Cl. 60-618.000.
Sasano, Akira; Nakano, Toshio; Tsutsui, Ken; Hashimoto, Michiaki; Kaneko, Tadao; Taniguchi, Yoshio; Matsumaru, Haruo; and Izumi, Akiya, to Hitachi, Ltd. Solid-state color imager and method of manufacturing the same. 4,395,629, Cl. 250-226.000.
Sato, Hideo: *See*—
Horie, Seiji; Nagata, Masayoshi; Nakano, Junji; and Sato, Hideo, 4,395,473, Cl. 430-58.000.
Sato, Makoto; Ohmori, Taiji; and Tsuchiya, Yoshikazu, to Honda Giken Kogyo Kabushiki Kaisha. Antiskid brake controlling method and apparatus for vehicles. 4,395,761, Cl. 364-426.000.
Satoh, Hiroaki; and Hiruta, Masaru, to Kureha Kagaku Kogyo Kabushiki Kaisha. Electroconductive resin composite material for molding. 4,395,362, Cl. 252-511.000.
Satrapa, Jaroslav, to Kretztechnik Gesellschaft m.b.H. Light pen controlled method and equipment for evaluating fluorescent screen pictures. 4,395,707, Cl. 340-703.000.
Sauer, Rudolf; Kienzle, Wolfgang; Paschke, Werner; and Hans, Waldemar, to Robert Bosch GmbH. Injection valve. 4,394,973, Cl. 239-467.000.
Scallet, Barrett L.: *See*—
Katz, Edward; Davis, Henry S.; and Scallet, Barrett L., 4,395,292, Cl. 127-29.000.
Scapa Dyers Inc.: *See*—
Dawes, Donald, 4,395,308, Cl. 162-232.000.
Scata, Umberto: *See*—
Giannetti, Enzo; and Scata, Umberto, 4,395,360, Cl. 252-429.00B.
Schadt, Martin: *See*—
Boller, Arthur; Germann, Alfred; Schadt, Martin; and Villiger, Alois, 4,395,350, Cl. 252-299.100.
Schaefer, Eugene J.: *See*—
Cooney, Charles L.; and Schaefer, Eugene J., 4,395,490, Cl. 435-201.000.
Schaeffer, Charles W.: *See*—
Wilson, Edwin B.; Eben, C. Frederick; Meyer, Charles L.; and Schaeffer, Charles W., 4,395,161, Cl. 405-259.000.
Schafer, Wolfgang: *See*—
Eiermann, Kurt; Horlebein, Eberhard; and Schafer, Wolfgang, 4,395,586, Cl. 174-138.00J.
Scheidemann, Hans; Rieth, Alois; Sebralla, Bruno; and Wohlfart, Walter, to W. C. Heraeus GmbH. Operating room light. 4,395,750, Cl. 362-239.000.
Scheithauer, Richard A.: *See*—
Vanderpool, Clarence D.; Scheithauer, Richard A.; and Gingerich, Richard G. W., 4,395,278, Cl. 75-0.5AA.
Scher, Herbert I.; and Ungar, Israel S., to Nevamar Corporation. Abrasion resistant laminate. 4,395,452, Cl. 428-148.000.
Schering Aktiengesellschaft: *See*—
Pfeiffer, Heinrich; Mutzel, Wolfgang; and Speck, Ulrich, 4,395,391, Cl. 424-5.000.
Schertler, Siegfried, to Vat Aktiengesellschaft Fur Vakuum-Apparate-Technik. Metallic sealing device for a high-vacuum closure. 4,395,049, Cl. 277-236.000.
Schimmel, Huibertus, to Samson Efficiency B.V. File. 4,395,153, Cl. 402-15.000.
Schlafly, Paul W., to Warner & Swasey Company, The. Boom cylinder. 4,395,192, Cl. 414-718.000.
Schlag, Johannes: *See*—
Naarmann, Herbert; Naegele, Dieter; Penzien, Klaus; and Schlag, Johannes, 4,395,497, Cl. 523-135.000.
Schmidt, Douglass N.; and Fischetti, Frank, Jr., to BASF Wyandotte Corporation. Spray dried vitamin E powder. 4,395,422, Cl. 424-284.000.
Schmidt, Ernst M.: *See*—
Aarts, Petrus J. J.; Fleck, Harald; Kocsisek, Karl; and Schmidt, Ernst M., 4,395,745, Cl. 360-129.000.
Schmidt, Wolfgang: *See*—
Kopke, Wolfgang; Muller, Manfred; Schmidt, Wolfgang; Eggert, Albert; Gahleitner, Erwin; and Raupach, Gerhard, 4,395,601, Cl. 179-179.000.
Schmidt, Yves, to Aciers et Outillage Peugeot. Buckle for a safety belt. 4,394,792, Cl. 24-230.00A.

Schmitt, Frederick L.: *See*—
Klemarczyk, Philip T.; Sanders, James M.; Vock, Manfred H.; Vinals, Joaquin F.; Schmitt, Frederick L.; and Granda, Edward J., 4,395,366, Cl. 252-545.000.
Schmitt, Philipp: *See*—
Marz, Dieter; Schmitt, Philipp; and Weidenhammer, Peter, 4,394,980, Cl. 241-46.020.
Schmolka, Irving R., to BASF Wyandotte Corporation. Artificial blood emulsifiers. 4,395,393, Cl. 424-78.000.
Schnable, George L.: *See*—
Kern, Werner; and Schnable, George L., 4,395,304, Cl. 156-657.000.
Schneider, John M.: *See*—
Crean, Peter A.; Schneider, John M.; and Lipani, Anthony F., 4,395,716, Cl. 346-1.100.
Schnirch, Leo: *See*—
Winn, Klaus; Engelbach, Klaus-Ludwig; and Schnirch, Leo, 4,395,080, Cl. 312-257.00R.
Schobl Enterprises, Inc.: *See*—
Schobl, Howard T., 4,394,872, Cl. 137-315.000.
Schobl, Howard T., to Schobl Enterprises, Inc. Valve assembly for packing removal. 4,394,872, Cl. 137-315.000.
Schold, George R. Apparatus for dispersing finely divided solid particles in a liquid vehicle with a mechanism for reducing screen clogging. 4,394,981, Cl. 241-46.170.
Schonfeldt, Martin K.: *See*—
Tsurimoto, Hidetoshi; Tokunaga, Koichi; and Schonfeldt, Martin K., 4,395,175, Cl. 414-21.000.
Schoolman, Arnold. Television microscope surgical method and apparatus therefor. 4,395,731, Cl. 358-88.000.
Schrader, Gert: *See*—
Pietsch, Gunter; Walter, Gerhard; Mewes, Gunter; and Schrader, Gert, 4,395,141, Cl. 384-147.000.
Schreurs, Jan W. H.: *See*—
Beall, George H.; Mansfield, Gerald R.; and Schreurs, Jan W. H., 4,395,271, Cl. 65-31.000.
Schroter, Gerhard, to Heraeus-Christ GmbH. Centrifuge rotor closure. 4,395,256, Cl. 494-38.000.
Schucker, Thomas R., to Allis-Chalmers Corporation. Continuous twin-stay columns for bulb hydraulic turbines. 4,395,198, Cl. 415-219.00R.
Schuler, Frederick E., to Donaldson Company, Inc. Compact dust filter assembly. 4,395,269, Cl. 55-302.000.
Schulz, Siegfried: *See*—
Eicker, Karl-Georg; Schulz, Siegfried; and Seim, Burkhart, 4,395,608, Cl. 200-153.00L.
Schuster, Ronald D. Cover for a rifle sight. 4,394,797, Cl. 33-244.000.
Schuster, Samuel J. Apparatus for making disposable, breathable receptacles. 4,395,254, Cl. 493-196.000.
Schutt, Donald W. Container counter. 4,395,625, Cl. 235-98.00C.
Schwarz, Otto: *See*—
Eibl, Johann; Schwarz, Otto; Elsinger, Fritz; and Philapitsch, Anton, 4,395,396, Cl. 424-101.000.
Schwarzkopf Development Corporation: *See*—
Sonnweber, Alfred; Bildstein, Hubert; and Egger, Lambert, 4,394,953, Cl. 228-124.000.
Schweizer, Erwin V.: *See*—
Hoener, Dieter W.; Lambert, Neville L.; and Schweizer, Erwin V., 4,395,172, Cl. 410-84.000.
Schwenzer, Reinhard: *See*—
Backe, Wolfgang; Goedecke, Wolf-Dieter; and Schwenzer, Reinhard, 4,394,965, Cl. 239-102.000.
Sciortino, Lawrence A. Outside air breathing supply system. 4,394,861, Cl. 128-205.250.
SCM Corporation: *See*—
Longrod, Scott J., 4,395,149, Cl. 400-215.000.
SCM Finanziaria S.p.A.: *See*—
Gemmani, Giuseppe, 4,394,894, Cl. 198-339.000.
Scoiete Nationale Elf Aquitaine: *See*—
Desgrandchamps, Guy; Kvasnikoff, Georges; and Blanc, Claude, 4,395,390, Cl. 423-573.00G.
Scott, James M.: *See*—
Porter, Frederic E.; and Scott, James M., 4,394,845, Cl. 118-303.000.
Scruggs, Jack G.: *See*—
Blackwell, Jennings P.; Tieszen, Dale O.; and Scruggs, Jack G., 4,395,509, Cl. 524-127.000.
Searles, Raymond C., to Mobil Oil Corporation. Seal for wear resistant inserts. 4,395,019, Cl. 251-357.000.
Seaward, William S.: *See*—
Janssen, Donovan M.; Magno, Robert; Seaward, William S.; and Valent, James A., 4,395,033, Cl. 271-10.000.
Sebralla, Bruno: *See*—
Scheidemann, Hans; Rieth, Alois; Sebralla, Bruno; and Wohlfart, Walter, 4,395,750, Cl. 362-239.000.
Seger, Rene: *See*—
Berna, Michel; Kant, Michel; Vilain, Jean P.; and Seger, Rene, 4,395,669, Cl. 318-502.000.
Seidel, Hans: *See*—
Stahl, Peter; Seidel, Hans; and Brunner, Herwig, 4,395,489, Cl. 435-190.000.
Seidel, Harold, to Bell Telephone Laboratories, Incorporated. Driving point impedance derived from a transfer impedance. 4,395,599, Cl. 179-170.0NC.
Seifert, Kurt: *See*—
Hofmann, Karl; Seifert, Kurt; and Junghauser, Josef, 4,394,970, Cl. 239-453.000.
Seim, Burkhart: *See*—
Eicker, Karl-Georg; Schulz, Siegfried; and Seim, Burkhart, 4,395,608, Cl. 200-153.00L.
Seki, Masayuki: *See*—
Mizusawa, Mitsutoyo; Seki, Masayuki; and Sunohara, Kazuo, 4,394,892, Cl. 188-196.0BA.
Sekiguchi, Yoshitoshi: *See*—
Okigami, Noboru; Hayasaka, Hiroshi; Sekiguchi, Yoshitoshi; and Tamura, Harushige, 4,395,223, Cl. 431-10.000.
Sekisui Kagaku Kogyo Kabushiki Kaisha: *See*—
Takagi, Toshinori; Nakata, Shinsaku; Mikami, Yoichi; Hotta, Masahiro; and Fukumoto, Yoshiyuki, 4,395,465, Cl. 428-626.000.
Sekizawa, Yasuharu: *See*—
Umezawa, Hamao; Takeuchi, Tomio; Aoyagi, Takaaki; Hachisu, Mitsugu; Kawamura, Kenji; Fukatsu, Shunzo; and Sekizawa, Yasuharu, 4,395,402, Cl. 424-177.000.
Sellers, Robert W., to Harris Corporation. Linear phase filter with self-equalized group delay. 4,395,688, Cl. 333-169.000.
Sensi, John E.: *See*—
Kunkle, Gerald E.; Sensi, John E.; and Galotta, Joseph A., 4,395,272, Cl. 65-99.500.
Senuma, Michio, to Canon Kabushiki Kaisha. Device for adjusting driving spring of focal plane shutter. 4,395,105, Cl. 354-246.000.
Seragnoli, Enzo, to G. D Societa per Azioni. Apparatus for feeding folded and flattened cartons to a packaging machine. 4,395,177, Cl. 414-130.000.
Seth, Kishankumar K., to Ethyl Corporation. Chlorosilane disproportionation process. 4,395,389, Cl. 423-341.000.
Setterholm, Jeffrey M.: *See*—
Egli, Werner H.; Setterholm, Jeffrey M.; and Weir, E. Jack, 4,394,831, Cl. 89-41.0EA.
Sewell Plastics, Inc.: *See*—
Alberghini, Alfred C.; and Nickel, Gerhard E. B., 4,395,378, Cl. 264-532.000.
Sexton, Charles W., Jr., to General Electric Company. Correction circuits for projection television. 4,395,662, Cl. 315-371.000.
Sferragatta, Enrico, to Mille Note System S.r.l. Note booklet, provided with a foldable cover, effective to act as a sheet and pen holder. 4,395,056, Cl. 281-31.000.
Shahan, Donald J.: *See*—
Liller, Paul R.; and Shahan, Donald J., 4,395,242, Cl. 445-5.000.
Shannon, Thomas L., Jr.: *See*—
Recine, Giuseppe, 4,394,941, Cl. 222-355.000.
Shapiro, Eugene, to Olin Corporation. Process for treating copper-aluminum-silicon alloys to improve fatigue strength. 4,395,295, Cl. 148-11.50C.
Shapiro, Howard M., to Sidney Farber Cancer Institute, Inc. Apparatus and method for killing unwanted cells. 4,395,397, Cl. 424-101.000.
Sharp Kabushiki Kaisha: *See*—
Yasuhira, Shuji; and Naka, Shinichi, 4,395,229, Cl. 431-261.000.
Sharrock, Barry; and Halliday, David P., to British Aerospace Public Limited Company. Aircraft wing and flap arrangement. 4,395,008, Cl. 244-215.000.
Shavit, Henri. Deformable container and a flat piece for making a container. 4,394,936, Cl. 222-107.000.
Shell Internationale Research Maatschappij B. V.: *See*—
Cotgreave, Terence; and Cliffe, David A., 4,394,931, Cl. 220-453.000.
Shell Oil Company: *See*—
Germaine, Gilbert R.; and Darnanville, Jean P., 4,395,579, Cl. 585-444.000.
Kluttz, Robert Q.; and Slaugh, Lynn H., 4,395,372, Cl. 260-465.00R.
Kwantes, Arien; and De Goederen, Cornelis W. J., 4,395,576, Cl. 568-913.000.
Slaugh, Lynn H.; and Willis, Carl L., 4,395,356, Cl. 252-413.000.
Shen, Chou-Ming. Automatic color-temperature compensation device. 4,395,730, Cl. 358-29.000.
Shenker, Martin, to Farrand Optical Co., Inc. Optical scanning probe with multiple outputs. 4,395,234, Cl. 434-33.000.
Sherwood, Edward F.; and Orndorff, Karl B., to Westinghouse Electric Corp. Coreless hung panel assembly. 4,394,809, Cl. 52-512.000.
Shetty, Bola V.; and Airey, John E., to Purdue Frederick Company, The. Antimicrobial bis-imidazolo-pyridine compound. 4,395,552, Cl. 546-118.000.
Shibata, Junichi: *See*—
Takeda, Shigeki; Shibata, Junichi; Shimakata, Masashi; Oshime, Yasuhiro; Gomi, Shintaro; and Kawamura, Katsuaki, 4,395,714, Cl. 343-725.000.
Shibata, Kiyoshi: *See*—
Miyakawa, Nobuhiro; Shibata, Kiyoshi; Watanabe, Toshio; and Ohata, Yosuke, 4,395,112, Cl. 355-14.00D.
Shichman, Daniel: *See*—
Singh, Anand P.; and Shichman, Daniel, 4,395,209, Cl. 425-33.000.
Shim, Norm, to Baxter Travenol Laboratories, Inc. Metering apparatus with downline pressure monitoring system. 4,394,862, Cl. 604-67.000.
Shimada, Minoru; and Torii, Kiyofumi, to Murata Manufacturing Co., Ltd. Self-regulating electric heater. 4,395,623, Cl. 219-544.000.
Shimakata, Masashi: *See*—
Takeda, Shigeki; Shibata, Junichi; Shimakata, Masashi; Oshime, Yasuhiro; Gomi, Shintaro; and Kawamura, Katsuaki, 4,395,714, Cl. 343-725.000.

Shimano Industrial Company Limited: *See*—
Noda, Hideo, 4,394,991, Cl. 242-84.10R.

Shimizu, Akira: *See*—
Tsuda, Hiroshi; Miyashita, Kiyoshi; Shimizu, Akira; Nishikawa, Masaji; and Kasuga, Muneo, 4,395,115, Cl. 355-25.000.

Shimizu, Chiyuki; and Hosokowa, Kiyoshi, to Toshiba Silicones, Ltd. Method of forming silicone films. 4,395,443, Cl. 427-387.000.

Shimizu, Senzo; Nomura, Isao; Harada, Masahiro; Usui, Motohachi; Taniyama, Susumu; and Yanada, Shigeo, to Mitsubishi Gas Chemical Company, Inc. Process for producing aromatic polyester carbonate resin. 4,395,534, Cl. 528-126.000.

Shimotamari, Akira: *See*—
Nakabayashi, Yasuyuki; Matsuura, Yoshio; Kurihara, Michio; Kamei, Takao; Nakamura, Akira; Komai, Keiichi; Shimotamari, Akira; and Wakabayashi, Takeshi, 4,395,334, Cl. 210-631.000.

Shin-Etsu Chemical Co., Ltd.: *See*—
Imada, Kiyoshi; Ueno, Susumu; and Nomura, Hirokazu, 4,395,434, Cl. 427-38.000.
Kubota, Yoshihiro; and Kuriyama, Osamu, 4,395,512, Cl. 524-413.000.

Shinohara, Kazuto: *See*—
Dziark, John J.; and Shinohara, Kazuto, 4,395,507, Cl. 524-101.000.

Shirahata, Kunikatsu: *See*—
Kasai, Masaji; Shirahata, Kunikatsu; and Kono, Motomichi, 4,395,558, Cl. 548-422.000.

Shirahata, Ryuji: *See*—
Kitamoto, Tatsuji; and Shirahata, Ryuji, 4,395,439, Cl. 427-132.000.

Shirey, Richard, to Donn Incorporated. Metal fastening system and method. 4,394,794, Cl. 29-432.000.

Shirley, Kirk R. Drill steering apparatus. 4,394,881, Cl. 175-76.000.

Shutter Mart of California, Inc.: *See*—
Kohler, Henry G.; and Major, Emeric L., 4,394,788, Cl. 16-334.000.

Sidman, Kenneth R.: *See*—
Tschirch, Richard P.; and Sidman, Kenneth R., 4,395,511, Cl. 524-371.000.

Sidney Farber Cancer Institute, Inc.: *See*—
Shapiro, Howard M., 4,395,397, Cl. 424-101.000.

Sidorenko, Georgy I.; Stankevich, Vladimar I.; Katsygin, Vitaly V.; and Lopato, Georgy P., to Belorussky Nauchnoissledovatelsky Institut Kardiologii. Apparatus for determining levels of physical loads. 4,394,865, Cl. 128-782.000.

Siebelt, Dirk B. L., to AWB Apparatenfabriek Warmtebouw B.V. Central heating boiler. 4,394,848, Cl. 122-13.00R.

Siemens Aktiengesellschaft: *See*—
Ahne, Hellmut; Kuhn, Eberhard; and Rubner, Roland, 4,395,482, Cl. 430-326.000.
Birkle, Siegfried; Rubner, Roland; Hauschildt, Hans; and Rissel, Eva-Maria, 4,395,481, Cl. 430-326.000.
Feissel, Wolfgang, 4,395,754, Cl. 364-200.000.
Hans, Karl; and Hackstein, Helmut, 4,395,587, Cl. 178-30.000.
Lauterbach, Christl, 4,395,727, Cl. 357-71.000.
Mahlein, Hans F., 4,395,090, Cl. 350-166.000.
Prestele, Karl; Franetzki, Manfred; and Reif, Erich, 4,395,259, Cl. 604-67.000.
Ries, Gunter, 4,395,584, Cl. 174-15.00S.

SIG - Schweizerische Industrie-Gesellschaft: *See*—
Fluck, Rene, 4,394,899, Cl. 198-408.000.

Sikorski, James A.; and Curtis, Tommie G., to Monsanto Company. Thiosulfenamide derivatives of N-phosphonomethylglycinonitriles as herbicides. 4,395,276, Cl. 71-87.000.

Sikorski, James A.: *See*—
Dutra, Gerard A.; and Sikorski, James A., 4,395,374, Cl. 260-941.000.

Silfvast, William T.; Szeto, Leo H.; and Wood, Obert R., II, to Bell Telephone Laboratories, Incorporated. Segmented plasma excitation-recombination light source. 4,395,770, Cl. 372-62.000.

Silverman, Daniel; and Johnson, Everett A. Access security control. 4,395,628, Cl. 235-382.000.

Simmons, Elizabeth J. Body cushion. 4,394,783, Cl. 5-432.000.

Simmons, Gerald C.; and Hilby, Noel E., to Boeing Company, The. Static line retrieval apparatus. 4,395,068, Cl. 294-78.00R.

Simons, Keith F., to Morgan Construction Company. High reduction method and apparatus for continuously hot rolling products. 4,394,822, Cl. 72-235.000.

Sindezingue, Claude: *See*—
Limare, Armand; Razumowski, Bernard; and Sindezingue, Claude, 4,395,291, Cl. 106-297.000.

Singer Company, The: *See*—
Clarey, Michael E., 4,395,170, Cl. 408-241.00R.

Singh, Anand P.; and Shichman, Daniel, to NRM Corporation. Tire press. 4,395,209, Cl. 425-33.000.

Singh, Balwant: *See*—
Henderson, William A., Jr.; and Singh, Balwant, 4,395,369, Cl. 260-453.00P.

Singh, Bawa: *See*—
Denton, Richard A.; and Singh, Bawa, 4,395,323, Cl. 204-298.000.

Siol, Werner: *See*—
Dinklage, Horst; Fink, Herbert; Frank, Peter; Rauch, Hubert; and Siol, Werner, 4,395,515, Cl. 524-832.000.

Sjonell, Goran. Tilting trap chamber. 4,394,943, Cl. 222-456.000.

Skinner, Raymond N.: *See*—
Lance, David G.; and Skinner, Raymond N., 4,395,431, Cl. 426-600.000.

Skipper, Uvon. Shock sub. 4,394,884, Cl. 175-321.000.

Skosnyagin, Jury A.: *See*—
Medovar, Boris I.; Gladky, Evgeny D.; Bondarenko, Oleg P.; Chekotilo, Leonty V.; Zayats, Valery I.; Egorov, Sergei P.; and Skosnyagin, Jury A., 4,395,771, Cl. 373-49.000.

Slaugh, Lynn H.; and Willis, Carl L., to Shell Oil Company. Method for removing catalyst residues from solutions of poly-1-butene. 4,395,356, Cl. 252-413.000.

Slaugh, Lynn H.: *See*—
Kluttz, Robert Q.; and Slaugh, Lynn H., 4,395,372, Cl. 260-465.00R.

Slutzky, Azriel, to Sun Electric Corporation. Automobile timing light. 4,395,680, Cl. 324-392.000.

Smaga, Gennady A.: *See*—
Bazarov, Vladimir G.; Kuzmin, Alexei V.; Smaga, Gennady A.; Kapchits, Zelik F.; Dennikov, Sergei J.; and Soosalu, Peter I., 4,395,228, Cl. 431-168.000.

Smalley, Ned J., to Owens-Illinois, Inc. Child-resistant closure assembly. 4,394,916, Cl. 215-220.000.

Smeets, Arnoldus A.: *See*—
Broeksema, Egbert; and Smeets, Arnoldus A., 4,395,211, Cl. 425-174.400.

Smierciak, Richard C.: *See*—
Giordano, Paul J.; and Smierciak, Richard C., 4,394,858, Cl. 126-400.000.

Smith, David C.; and Meyerand, Russell G., Jr., to United Technologies Corporation. Continuous-wave plasma-assisted radiation treatment of reflective solids. 4,395,616, Cl. 219-121.00L.

Smith, Derrick A. Solar light bulb. 4,394,860, Cl. 126-439.000.

Smith, Harvey E., Sr.; and Weis, Seigfried K., to C. L. Frost & Son, Inc. Bearing unit with improved inner race. 4,395,078, Cl. 308-196.000.

Smith, James A.: *See*—
McLaughlin, James H.; Dente, Stephen V.; Carmello, Robert; and Smith, James A., 4,395,347, Cl. 252-139.000.

Smith Kline & French Laboratories Limited: *See*—
Durant, Graham J.; Ganellin, Charon R.; and Young, Rodney C., 4,395,419, Cl. 424-270.000.

Smith, Mark C.: *See*—
Pierce, O. Leon; Smith, Mark C.; and Driver, R. Byron, 4,395,590, Cl. 179-2.0DP.

Smith, Martin T., Jr.: *See*—
Snyder, Larry L.; and Smith, Martin T., Jr., 4,394,966, Cl. 239-127.000.

Smith, Richard H.; and Armstrong, Donald J., to General Motors Corporation. Compression operated injector with fuel injection control. 4,394,856, Cl. 123-506.000.

Smith, Robert A.: *See*—
White, Mary A.; Beers, Melvin D.; Lucas, Gary M.; Smith, Robert A.; and Swiger, Roger T., 4,395,526, Cl. 528-18.000.

Smith, Robert C.; and Cox, A. Benns, II, to G. S. Blodgett Co., Inc. Dual flow heating apparatus. 4,395,233, Cl. 432-176.000.

SmithKline Beckman Corporation: *See*—
Pfeiffer, Francis R., 4,395,401, Cl. 424-177.000.

Snowden, Dennis C.: *See*—
Moree, Elwood D.; and Snowden, Dennis C., 4,394,799, Cl. 33-343.000.

Snyder Industries, Inc.: *See*—
Snyder, Larry L.; and Smith, Martin T., Jr., 4,394,966, Cl. 239-127.000.

Snyder, Larry L.; and Smith, Martin T., Jr., to Snyder Industries, Inc. Spraying apparatus having a fluid storage tank with agitator and anti-vortex tank fittings. 4,394,966, Cl. 239-127.000.

Sobata, Katsutoshi: *See*—
Tomizawa, Fumio; Sobata, Katsutoshi; Yoshimatsu, Yoshiaki; Saito, Sadayuki; Otani, Takashi; and Hirano, Senzaburo, 4,395,023, Cl. 266-158.000.

Socapex: *See*—
Gorre, Paul; and Giraud, Jean M., 4,395,087, Cl. 339-278.00R.

Socared S.A.: *See*—
Brandt, Bertil, 4,394,979, Cl. 241-26.000.

Societa Nationale Industrielle Aerospatiale: *See*—
Girard, Alain, 4,395,581, Cl. 136-246.000.

S.p.A. Officine Maccaferri gia Raffaele Maccaferri & Figli: *See*—
Zaccheroni, Giulio, 4,394,924, Cl. 220-19.000.

Societe Anonyme d'Explosifs et de Produits Chimiques: *See*—
Murphy, John M.; Spensley, Robert H.; and Ellis, John, 4,395,162, Cl. 405-261.000.

Societe Anonyme dite: Compagnie Industrielle des Lasers: *See*—
Nory, Pierre; and Ripart, Guy, 4,395,121, Cl. 356-152.000.

Societe Anonyme dite: L'Oreal: *See*—
Jacquet, Bernard; Lang, Gerard; Malaval, Alain; Forestier, Serge; and Le Trung, Do, 4,395,541, Cl. 528-367.000.

Societe Anonyme Societe Miniere et Metallurgique de Penarroya: *See*—
Limare, Armand; Razumowski, Bernard; and Sindezingue, Claude, 4,395,291, Cl. 106-297.000.

Societe Audax: *See*—
Lesage, Philippe M., 4,395,598, Cl. 179-115.50R.

Societe CEM Compagnie Electro-Mecanique & Cie SNC: *See*—
Thuy, N'Guyen U., 4,395,666, Cl. 318-139.000.

Societe d'Etude et de Construction de Machines pour Toutes Industries S.E.C.O.M.A. S.A.: *See*—
Perraud, Raymond J., 4,395,163, Cl. 405-303.000.

Societe Francaise des Produits pour Catalyse: *See*—
Le Page, Jean-Francois; Billon, Alain; and Jacquin, Yves, 4,395,329, Cl. 208-251.00H.

Sonnweber, Alfred; Bildstein, Hubert; and Egger, Lambert, to Schwarzkopf Development Corporation. Method of joining individual parts of an X-ray anode, in particular of a rotating anode. 4,394,953, Cl. 228-124.000.

Sony Corporation: *See—*
Arai, Kiyoshi, 4,395,146, Cl. 400-121.000.
Nakazawa, Tetsuji; and Asai, Toshio, 4,395,739, Cl. 360-61.000.
Oki, Ryuji; and Ebisawa, Takashi, 4,395,777, Cl. 455-183.000.
Osada, Yasuo; Nakagawa, Takeo; and Utsunomiya, Kimitake, 4,395,778, Cl. 455-276.000.

Soosalu, Peter I.: *See—*
Bazarov, Vladimir G.; Kuzmin, Alexei V.; Smaga, Gennady A.; Kapchits, Zelik F.; Dennikov, Sergei J.; and Soosalu, Peter I., 4,395,228, Cl. 431-168.000.

Sorenson Research Co., Inc.: *See—*
Todd, Robert J.; and Reynolds, Gordon S., 4,395,260, Cl. 604-122.000.

Sorokina, Irina B.: *See—*
Ovchinnikov, Jury A.; Ivanov, Vadim T.; Rostovtseva, Larisa I.; Andronova, Tatyana M.; Sorokina, Irina B.; and Malkova, Veronika P., 4,395,399, Cl. 424-177.000.

Soski, Norbert S.; and Levine, Richard S. Electronic baseball game. 4,395,760, Cl. 364-410.000.

Southern Imperial, Inc.: *See—*
Valiulis, Stanley J.; and Barnes, Richard D., 4,394,909, Cl. 211-59.100.

Southgate, Peter D.; and Gorog, Istvan, to RCA Corporation. Defect detection system. 4,395,122, Cl. 356-237.000.

Sowash, Thomas R., to General Motors Corporation. Cam operated dual switch assembly. 4,395,609, Cl. 200-153.0LA.

Sowell, Mark S., III: *See—*
Cutchens, Charles E.; Mathews, Marion J., III; and Sowell, Mark S., III, 4,395,573, Cl. 564-492.000.

Spademan, Richard G. Ski release side clamping binding with hinged jaw members. 4,395,055, Cl. 280-624.000.

Spainhour, Phillip A., to Ammco Tools, Inc. Strut compressor. 4,395,020, Cl. 254-10.500.

Spanset Inter A.G.: *See—*
Robin, Peter D. L., 4,395,067, Cl. 294-74.000.

Speck, Ulrich: *See—*
Pfeiffer, Heinrich; Mutzel, Wolfgang; and Speck, Ulrich, 4,395,391, Cl. 424-5.000.

Spensley, Robert H.: *See—*
Murphy, John M.; Spensley, Robert H.; and Ellis, John, 4,395,162, Cl. 405-261.000.

Sperry Corporation: *See—*
Wong, Simon F., 4,395,077, Cl. 308-189.00A.

Spigarelli, Donald J., to HTC Corporation, The. Counter-convection vapor control system. 4,394,802, Cl. 34-27.000.

Spinks, Donald E. Ladder standoff device. 4,394,887, Cl. 182-214.000.

Spiralux Limited: *See—*
Avison, Gerald; and Blenkinsop, Philip T., 4,395,147, Cl. 400-144.200.

Sprague Electric Company: *See—*
White, Jack D., 4,395,747, Cl. 361-433.000.
Whitman, Alfred, 4,395,305, Cl. 156-665.000.

Sprague, Henry W., III. Surface material spreading. 4,395,156, Cl. 404-110.000.

Sprecher & Schuh AG: *See—*
Roth, Adrian W., 4,395,607, Cl. 200-148.00R.

Springs, Thomas W.; and Wallis, William F., to Besser Company. Noise suppressing block molding machinery. 4,395,213, Cl. 425-211.000.

Sprintschnik, Gerhard, to Hoechst Aktiengesellschaft. Developer mixture and process for developing exposed negative-working diazonium salt layers. 4,395,480, Cl. 430-309.000.

Spyder Sales & Service, Inc.: *See—*
Barchard, John, 4,395,190, Cl. 414-664.000.

Staedtler & Uhl: *See—*
Egerer, Josef, 4,394,789, Cl. 19-97.000.

Stahl, Peter; Seidel, Hans; and Brunner, Herwig, to Boehringer Mannheim GmbH. Process for the recovery of glycerol dehydrogenase. 4,395,489, Cl. 435-190.000.

Stahl, William L., Jr.: *See—*
Cases, Moises; Kraft, Wayne R.; Moore, Victor S.; Stahl, William L., Jr.; and Thoma, Nandor G., 4,395,646, Cl. 307-468.000.

Stalson, Stanley L.; and Johns, William H., to Wire Lab Company. Apparatus for cleaning and scale dust removal from steel rod after mechanical descaling. 4,394,786, Cl. 15-306.00A.

Stamboulian, Nazareth; and Neumann, Fred F., to American Safety Equipment Corporation. Resiliently mounted split pawl locking means for dual spool retractor. 4,394,993, Cl. 242-107.40A.

Stanadyne, Inc.: *See—*
Moen, Alfred M., 4,395,018, Cl. 251-310.000.

Standard Duplicating Machines Corporation: *See—*
Bergman, Carl A.; Thomas, Roy L.; and Bourbeau, Richard A., 4,395,036, Cl. 271-171.000.

Standard Oil Company: *See—*
Giordano, Paul J.; and Smierciak, Richard C., 4,394,858, Cl. 126-400.000.

Standard Oil Company (Indiana): *See—*
Hensley, Albert L., Jr.; and Quick, Leonard M., 4,395,328, Cl. 208-251.00H.
Kaduk, James A., 4,395,388, Cl. 423-339.000.

Stankevich, Vladimar I.: *See—*
Sidorenko, Georgy I.; Stankevich, Vladimar I.; Katsygin, Vitaly V.; and Lopato, Georgy P., 4,394,865, Cl. 128-782.000.

Stanley Tools Limited: *See—*
Ramsden, Paul N.; and Groves, Michael H., 4,395,630, Cl. 250-237.00G.

Start, John F., to FMC Corporation. Process for production of an alkali metal dichloroisocyanurate and trichloroisocyanuric acid. 4,395,548, Cl. 544-190.000.

Steinberg, Mitchell I.: *See—*
Molloy, Bryan B.; and Steinberg, Mitchell I., 4,395,410, Cl. 424-244.000.

Sterling Drug Inc.: *See—*
Chowdhury, Ajit K.; Bauer, Gerald L.; and Lehmann, Richard W., 4,395,339, Cl. 210-761.000.
Neumann, Helmut C., 4,395,423, Cl. 424-304.000.

Sternberg, Stanley R.; Dargel, William O.; Lougheed, Robert M.; McCubbrey, David L.; and Richardson, Ralph E., to Environmental Research Institute of Michigan. Neighborhood transformation logic circuitry for an image analyzer system. 4,395,698, Cl. 382-27.000.

Sternberg, Stanley R., to Environmental Research Institute of Michigan. Method and apparatus for pattern recognition and detection. 4,395,699, Cl. 382-41.000.

Stevens, Travis E.: *See—*
Emmons, William D.; and Stevens, Travis E., 4,395,524, Cl. 526-307.200.

Stevenson, Neil A.: *See—*
Taylor, James E.; and Stevenson, Neil A., 4,395,421, Cl. 424-283.000.

Stivers, Scotlund. Flame thrower attachment. 4,395,227, Cl. 431-142.000.

Stoehr, Herbert M., to Artos Engineering Company. Flying shear for metal strip stock. 4,394,829, Cl. 83-314.000.

Stoffler, Albert: *See—*
Thor, Gunter; Stoffler, Albert; and Mehl, Diethoff, 4,394,939, Cl. 222-207.000.

Stone, W. James; Burklund, Vernon D.; and Dillinger, Robert B., to United States of America, Navy. Attitude selective aircrew escape control. 4,395,001, Cl. 244-122.0AE.

Stoyanov, Ben: *See—*
Phipps, Arthur L.; and Stoyanov, Ben, 4,395,214, Cl. 425-214.000.

Strauss, Daniel L., to Procter & Gamble Company, The. Granular fabric softening composition. 4,395,342, Cl. 252-8.750.

Strauss, Georg: *See—*
Braun, Albert; Portz, Willi; Strauss, Georg; and Delhey, Hans-Martin, 4,395,282, Cl. 75-58.000.

Sturwold, Robert J., to Cincinnati-Vulcan Company, The. Water-based coating oil. 4,395,286, Cl. 106-14.130.

Sugawara, Shinichi: *See—*
Ohki, Eiji; Oida, Sadao; Yoshida, Akira; Hayashi, Teruo; and Sugawara, Shinichi, 4,395,418, Cl. 424-270.000.

Sugiyama, Hiroaki, to Ricoh Co., Ltd. Threaded cap with inner plug. 4,394,923, Cl. 215-329.000.

Suling, Carlhans: *See—*
Waniczek, Helmut; Suling, Carlhans; Lindner, Christian; and Bartl, Herbert, 4,395,517, Cl. 525-168.000.

Sulzberg, Theodore; and Ma, Chi, to Sun Chemical Corporation. Adhesive system for particleboard manufacture. 4,395,504, Cl. 524-14.000.

Sun Chemical Corporation: *See—*
Sulzberg, Theodore; and Ma, Chi, 4,395,504, Cl. 524-14.000.

Sun Electric Corporation: *See—*
Slutzky, Azriel, 4,395,680, Cl. 324-392.000.

Sunaga, Yoshimitsu; Kamiura, Toshio; and Honda, Satoru, to Pioneer Electronic Corporation. Pinch roller drive mechanism and control circuit in open reel type tape recorder. 4,395,743, Cl. 360-90.000.

Sunohara, Kazuo: *See—*
Mizusawa, Mitsutoyo; Seki, Masayuki; and Sunohara, Kazuo, 4,394,892, Cl. 188-196.0BA.

Survival Technology, Inc.: *See—*
Bartner, Elliot, 4,394,863, Cl. 604-90.000.

Sury, Yel S., to Ciba-Geigy Corporation. Process for removing trace amounts of epichlorohydrin from heat sensitive glycidyl products. 4,395,542, Cl. 528-481.000.

Sushardt, Wolfgang: *See—*
Ciongwa, Joachim; Heckmann, Werner; Jendrichowski, Klaus; Quest, Karl; Ruppell, Christian; and Sushardt, Wolfgang, 4,394,867, Cl. 134-104.000.

Suwyn, Donald W. Filling and distribution apparatus and method for silos. 4,395,182, Cl. 414-299.000.

Suzuki, Akiyoshi, to Canon Kabushiki Kaisha. Printing apparatus having an in-focus detector. 4,395,117, Cl. 355-43.000.

Suzuki, Kiyoaki; Watanabe, Masaru; Yamamoto, Hisashi; Hayashi, Tomoharu; and Miura, Takuji, to Victor Company of Japan, Limited. Speaker diaphragm assembly and a method of manufacturing the same. 4,395,597, Cl. 179-115.50R.

Suzuki, Miyo: *See—*
Nakanishi, Toshiharu; Suzuki, Miyo; and Ohigashi, Hiroji, 4,395,652, Cl. 310-334.000.

Suzuki, Noboru: *See—*
Kunimoto, Go; Ichinose, Isao; Suzuki, Noboru; and Mori, Fumio, 4,395,446, Cl. 428-35.000.

Suzuki, Teiji: *See—*
Asakura, Yamato; Suzuki, Teiji; and Kawamura, Fumio, 4,395,386, Cl. 423-249.000.

Suzuki, Yoshiaki: *See—*
Matsuda, Terumi; Ishiguro, Shoji; Moriuchi, Shigenori; and Suzuki, Yoshiaki, 4,395,483, Cl. 430-411.000.

Sweda International, Inc.: *See—*
Melys, Aleksandras A., 4,395,081, Cl. 339-14.00R.

Sweeney, William M., to Texaco, Inc. Novel method of extending a hydrocarbon fuel heavier than gasoline. 4,395,267, Cl. 44-56.000.
Swenson, Emil S.: *See*—
Swenson, Gerald R.; Swenson, Emil S.; and Young, Gary A., 4,394,784, Cl. 5-453.000.
Swenson, Gerald R.; Swenson, Emil S.; and Young, Gary A., to Dial-A-Firm International, Inc. Air bed with firmness control. 4,394,784, Cl. 5-453.000.
Swick, Robert M., to General Motors Corporation. Fuel control for gas turbine with continuous pilot flame. 4,394,811, Cl. 60-39.28R.
Swiger, Roger T.: *See*—
White, Mary A.; Beers, Melvin D.; Lucas, Gary M.; Smith, Robert A.; and Swiger, Roger T., 4,395,526, Cl. 528-18.000.
Swisher, James A. Double action barrel lock. 4,394,820, Cl. 70-34.000.
Switall, Thomas G., to Ryco Graphic Manufacturing, Inc. Fluid valve with compressible channel. 4,394,873, Cl. 137-613.000.
Swithenbank, Colin, to Rohm and Haas Company. Preparation of 5-(2-halo-4-trifluoromethylphenoxy)-2-nitrobenzoic acid and salts and esters and amides. 4,395,570, Cl. 562-435.000.
Sygnator, Henry A., to Illinois Tool Works Inc. Drill screw with protective burrs. 4,395,173, Cl. 411-387.000.
Syntex (U.S.A.) Inc.: *See*—
Dvorak, Charles A., 4,395,571, Cl. 562-466.000.
Szabo, Andras I.: *See*—
Einolf, Charles W., Jr.; Szabo, Andras I.; and Crew, Albert W., 4,395,710, Cl. 340-825.500.
Szasz, Gyorgy: *See*—
Hermecz, Istvan; Kokosi, Jozsef; Horvath, Agnes; Meszaros, Zoltan; Szasz, Gyorgy; Breining, Tibor; and Vasvari nee Debreczy, Lelle, 4,395,549, Cl. 544-252.000.
Szeto, Leo H.: *See*—
Silfvast, William T.; Szeto, Leo H.; and Wood, Obert R., II, 4,395,770, Cl. 372-62.000.
Szirt nee Kiszelly, Eniko: *See*—
Budai, Zoltan; Lay nee Konya, Aranka; Mezei, Tibor; Petocz, Lujza; Grasser, Katalin; Kosoczky, Ibolya; Szirt nee Kiszelly, Eniko; and Gorog, Peter, 4,395,413, Cl. 424-250.000.
Tabor, Edward; and Gerety, Robert J., to United States of America, Health and Human Services. Detection of non-A, non-B hepatitis associated antigen. 4,395,395, Cl. 424-89.000.
Tada, Isao; Okamura, Toshio; Kousaka, Akira; and Nakai, Kaichiro, to Tokyo Shibaura Denki Kabushiki Kaisha. Magnetron unit with a magnetic field compensating means. 4,395,657, Cl. 315-39.710.
Taguchi, Tatsuhisa: *See*—
Maruyama, Teruo; Taguchi, Tatsuhisa; and Onoda, Tadayuki, 4,395,208, Cl. 418-102.000.
Tai, Masaru: *See*—
Saikawa, Isamu; Takano, Shuntaro; Imaizumi, Hiroyuki; Takakura, Isamu; Ochiai, Hirokazu; Yasuda, Takashi; Taki, Hideo; Tai, Masaru; and Kodama, Yutaka, 4,395,412, Cl. 424-246.000.
Taig, Alistair G.; and Jordan, David D., to Bendix Corporation, The. Universal joint. 4,395,246, Cl. 464-153.000.
Taillet, Joseph; and Maulard, Jean, to Office National d'Etudes et de Recherche Aerospatiales (ONERA). Process and apparatus for exploring the atmosphere of a planet. 4,394,998, Cl. 244-31.000.
Taira, Kazuo; Morofuji, Akihiko; and Ueno, Hiroshi, to Toyo Seikan Kaisha, Ltd. Adhesive for production of metal bottles. 4,395,538, Cl. 528-272.000.
Tait, William S.; Martin, Richard L.; and Rodgers, Richard A., to Petrolite Corporation. Pitting corrosion meter. 4,395,318, Cl. 204-404.000.
Tajima, Hatsuo: *See*—
Hosono, Nagao; and Tajima, Hatsuo, 4,395,110, Cl. 355-3.0DD.
Takada, Haruhiko, to Diesel Kiki Co., Ltd. Vane compressor having a discharge rate control. 4,395,203, Cl. 417-282.000.
Takada, Yoshinori: *See*—
Kasashima, Tatsuji; Morita, Shuji; Hayami, Hiroyuki; Ose, Seiroku; Takada, Yoshinori; and Nozaki, Fumihiro, 4,395,320, Cl. 204-206.000.
Takagi, Toshinori; Nakata, Shinsaku; Mikami, Yoichi; Hotta, Masahiro; and Fukumoto, Yoshiyuki, to Sekisui Kagaku Kogyo Kabushiki Kaisha. Magnetic recording medium and process for production thereof. 4,395,465, Cl. 428-626.000.
Takahashi, Fumio, to Nippon Kogaku K.K. Method of and apparatus for measuring the refractive power of a contact lens. 4,395,120, Cl. 356-125.000.
Takahashi, Ituo: *See*—
Terakado, Ryoji; Iwasa, Masaru; Takahashi, Ituo; Anzawa, Norio; and Yoshida, Gen, 4,395,021, Cl. 266-85.000.
Takahashi, Masanori, to Fujitsu Limited. Buffer memory control system of the swap system. 4,395,763, Cl. 364-900.000.
Takahashi, Shigeo: *See*—
Naito, Yukio; Tamura, Masahide; and Takahashi, Shigeo, 4,395,776, Cl. 455-119.000.
Takahashi, Tohru: *See*—
Kanbe, Junichiro; Toyono, Tsutomu; Hosono, Nagao; and Takahashi, Tohru, 4,395,476, Cl. 430-102.000.
Takahashi, Yuji; and Masaki, Hisaji, to Canon Kabushiki Kaisha. Sheet conveying device. 4,395,111, Cl. 355-14.00R.
Takai, Kazuki: *See*—
Hayashi, Hideki; and Takai, Kazuki, 4,394,995, Cl. 242-207.000.
Takakura, Isamu: *See*—
Saikawa, Isamu; Takano, Shuntaro; Imaizumi, Hiroyuki; Takakura, Isamu; Ochiai, Hirokazu; Yasuda, Takashi; Taki, Hideo; Tai, Masaru; and Kodama, Yutaka, 4,395,412, Cl. 424-246.000.
Takano, Shuntaro: *See*—
Saikawa, Isamu; Takano, Shuntaro; Imaizumi, Hiroyuki; Takakura, Isamu; Ochiai, Hirokazu; Yasuda, Takashi; Taki, Hideo; Tai, Masaru; and Kodama, Yutaka, 4,395,412, Cl. 424-246.000.
Takaya, Yoshiaki: *See*—
Tsutsumi, Kazuhiro; Tanoue, Genichiro; and Takaya, Yoshiaki, 4,395,705, Cl. 340-520.000.
Takeda, Shigeki; Shibata, Junichi; Shimakata, Masashi; Oshime, Yasuhiro; Gomi, Shintaro; and Kawamura, Katsuaki, to Pioneer Electronic Corporation. Antenna array system usable for AM/FM receiver. 4,395,714, Cl. 343-725.000.
Takenouchi, Akira; and Niwa, Yukio, to Daidotokushuko Kabushiki Kaisha. Preheating process for steel-making materials. 4,395,280, Cl. 75-28.000.
Takeuchi, Akihiro: *See*—
Kobayashi, Masaaki; Igata, Kouichi; and Takeuchi, Akihiro, 4,395,741, Cl. 360-77.000.
Takeuchi, Kazuo: *See*—
Nakata, Kazuo; Iochi, Akihiko; Kaise, Isamu; Takeuchi, Kazuo; and Nomura, Katsuhiko, 4,395,119, Cl. 356-73.000.
Takeuchi, Tomio: *See*—
Umezawa, Hamao; Takeuchi, Tomio; Aoyagi, Takaaki; Hachisu, Mitsugu; Kawamura, Kenji; Fukatsu, Shunzo; and Sekizawa, Yasuharu, 4,395,402, Cl. 424-177.000.
Taki, Hideo: *See*—
Saikawa, Isamu; Takano, Shuntaro; Imaizumi, Hiroyuki; Takakura, Isamu; Ochiai, Hirokazu; Yasuda, Takashi; Taki, Hideo; Tai, Masaru; and Kodama, Yutaka, 4,395,412, Cl. 424-246.000.
Takii, Yasuo: *See*—
Kondo, Shiro; and Takii, Yasuo, 4,395,611, Cl. 200-314.000.
Tamai, Yasuo: *See*—
Ogawa, Hiroshi; and Tamai, Yasuo, 4,395,466, Cl. 428-695.000.
Tamura, Harushige: *See*—
Okigami, Noboru; Hayasaka, Hiroshi; Sekiguchi, Yoshitoshi; and Tamura, Harushige, 4,395,223, Cl. 431-10.000.
Tamura, Masahide: *See*—
Naito, Yukio; Tamura, Masahide; and Takahashi, Shigeo, 4,395,776, Cl. 455-119.000.
Tanaka, Hideyuki: *See*—
Tanaka, Hiroto; Kohno, Yasumasa; Tanaka, Hideyuki; and Sasaki, Kotaro, 4,395,746, Cl. 361-143.000.
Tanaka, Hiroto; Kohno, Yasumasa; Tanaka, Hideyuki; and Sasaki, Kotaro, to Ishikawajima-Harima Jukogyo Kabushiki Kaisha; and Tohoku Kinzoku Kogyo Kabushiki Kaisha. Method and device for magnetically transporting. 4,395,746, Cl. 361-143.000.
Tanaka, Kojiro: *See*—
Namiki, Masayuki; Kamiya, Masaaki; Kojima, Yoshikazu; and Tanaka, Kojiro, 4,395,139, Cl. 374-178.000.
Tanaka, Yoshiharu; Watanabe, Yoshiaki; and Sasaki, Kou, to Mitsui Engineering and Shipbuilding Company Limited. Exhaust gas heat recovery system in internal combustion engine. 4,394,813, Cl. 60-618.000.
Tandberg Data A/S: *See*—
Helgeland, Olav; Rudi, Guttorm; and Engely, Odd, 4,395,010, Cl. 248-371.000.
Tanenbaum, Joseph M. Apparatus for welding metal trusses. 4,395,615, Cl. 219-79.000.
Taniguchi, Yoshio: *See*—
Sasano, Akira; Nakano, Toshio; Tsutsui, Ken; Hashimoto, Michiaki; Kaneko, Tadao; Taniguchi, Yoshio; Matsumaru, Haruo; and Izumi, Akiya, 4,395,629, Cl. 250-226.000.
Taniyama, Susumu: *See*—
Shimizu, Senzo; Nomura, Isao; Harada, Masahiro; Usui, Motohachi; Taniyama, Susumu; and Yanada, Shigeo, 4,395,534, Cl. 528-126.000.
Tanoue, Genichiro: *See*—
Tsutsumi, Kazuhiro; Tanoue, Genichiro; and Takaya, Yoshiaki, 4,395,705, Cl. 340-520.000.
Tartaglia, Paul. Automobile cargo carrying rack. 4,394,947, Cl. 224-42.430.
Taylor, Henry J. Mechanism for capturing and releasing a spinning object. 4,395,006, Cl. 244-161.000.
Taylor, James E.; and Stevenson, Neil A., to Fisons Limited. Disodium cromoglycate formulations. 4,395,421, Cl. 424-283.000.
Taylor, James H., Jr., to Loctite Corporation. Valve having suck-back feature. 4,394,945, Cl. 222-571.000.
TE KA DE Felten & Guilleaume Fernmeldeanlagen GmbH: *See*—
Parras, Karl-Heinz, 4,395,690, Cl. 333-214.000.
Technology Management, Inc.: *See*—
Downs, Robert F.; and Santillan, Salvadore C., 4,395,610, Cl. 200-292.000.
Tecumseh Products Company: *See*—
Kronich, Peter G.; and Arendt, Dan R., 4,394,893, Cl. 192-1.000.
Teldix GmbH: *See*—
Marinescu, Marlene, 4,395,693, Cl. 336-223.000.
Teledyne Industries, Inc.: *See*—
Conrad, Richard A., 4,395,084, Cl. 339-75.0MP.
Tell, Peter, to AB Piab. Multi-ejector. 4,395,202, Cl. 417-169.000.
Tellus Maskin AB: *See*—
Wirholm, Stig; and Berggren, Soren, 4,395,183, Cl. 414-416.000.
Teraji, Tsutomu: *See*—
Kamiya, Takashi; Teraji, Tsutomu; Nakai, Yoshiharu; Sakane, Kazuo; and Goto, Jiro, 4,395,411, Cl. 424-246.000.
Terakado, Ryoji; Iwasa, Masaru; Takahashi, Ituo; Anzawa, Norio; and Yoshida, Gen, to Nippon Steel Corporation. Vertical continuous annealing furnace and its operating method. 4,395,021, Cl. 266-85.000.

Terasita, Takaaki, to Fuji Photo Film Co., Ltd. Scene brightness measuring system. 4,395,099, Cl. 354-31.000.
Terbush, William G. Energy conversion apparatus. 4,395,664, Cl. 318-112.000.
Terrell, Christopher E., to W. F. Industries, Inc. Clip for suspension filing. 4,395,058, Cl. 281-46.000.
Testut Aequitas: *See*—
Dauge, Gilbert V.; Langlais, Jacques F.; and Quehen, Daniel J., 4,394,885, Cl. 177-210.00C.
Teutenberg, Josef: *See*—
Beltrop, Herbert; Teutenberg, Josef; and Hilbig, Manfred, 4,395,164, Cl. 406-74.000.
Texaco, Inc.: *See*—
Larkin, John M., 4,395,578, Cl. 585-10.000.
Sweeney, William M., 4,395,267, Cl. 44-56.000.
Tezuka, Nobuo, to Canon Kabushiki Kaisha. Film winding device for camera. 4,395,103, Cl. 354-212.000.
Theiler, Richard F., to Armour and Company. Process for preparing cooked meat having reduced levels of N-nitrosamines. 4,395,428, Cl. 426-266.000.
Therma-Plex Corporation: *See*—
Wyner, Jay S., 4,395,457, Cl. 428-312.400.
Thermo King Corporation: *See*—
Brownfield, Jerry A.; Sandberg, Richard J.; Niemi, Thomas J.; and Howland, Leland L., 4,394,818, Cl. 62-239.000.
Thibodeaux, Francis. Multifunction, multipurpose construction tool. 4,394,801, Cl. 33-496.000.
Thiokol Corporation: *See*—
Bakken, Gordon J.; Randall, Alfred R.; and Bodily, Richard W., 4,395,143, Cl. 384-221.000.
Thoma, Nandor G.: *See*—
Cases, Moises; Kraft, Wayne R.; Moore, Victor S.; Stahl, William L., Jr.; and Thoma, Nandor G., 4,395,646, Cl. 307-468.000.
Thomas, Roy L.: *See*—
Bergman, Carl A.; Thomas, Roy L.; and Bourbeau, Richard A., 4,395,036, Cl. 271-171.000.
Thome, Ludwig; Wanner, Karl; and Bretthauer, Karlheinz, to Robert Bosch GmbH. Linear electromagnetic vibrator. 4,395,649, Cl. 310-15.000.
Thomson - CSF: *See*—
Fraleux, Jean, 4,395,736, Cl. 358-213.000.
Thor, Gunter; Stoffler, Albert; and Mehl, Dietholf, to Henkel Kommanditgesellschaft auf Aktien. Dispenser container for viscous fluids. 4,394,939, Cl. 222-207.000.
Thorsell Holdings Ltd.: *See*—
Thorsell, Stanley E., 4,394,808, Cl. 52-483.000.
Thorsell, Stanley E., to Robert S. Agar, Inc.; Thorsell Holdings Ltd.; and Mudlake Holdings Ltd. Fastener for attaching panel to stud. 4,394,808, Cl. 52-483.000.
Thuy, N'Guyen U., to Societe CEM Compagnie Electro-Mecanique & Cie SNC. D.C. Series excited traction motor capable of operating with a continuous current power supply. 4,395,666, Cl. 318-139.000.
Tieszen, Dale O.: *See*—
Blackwell, Jennings P.; Tieszen, Dale O.; and Scruggs, Jack G., 4,395,509, Cl. 524-127.000.
Timar, Thomas: *See*—
MacDonell, Wayne O.; Graves, Donald L.; and Timar, Thomas, 4,395,178, Cl. 414-138.000.
Timex Corporation: *See*—
Frantz, Richard J., 4,395,135, Cl. 368-63.000.
Timmermans, Francis; and Vandervorst, Jean, to Jeumont-Schneider. Pump safety device. 4,395,048, Cl. 277-65.000.
TMC Corporation: *See*—
Wittmann, Heinz, 4,395,054, Cl. 280-605.000.
Todd, Robert J.; and Reynolds, Gordon S., to Sorenson Research Co., Inc. Drip chamber. 4,395,260, Cl. 604-122.000.
Togami, Henry K.: *See*—
Ritter, Don F.; St. Clair, Jack A.; and Togami, Henry K., 4,394,882, Cl. 175-89.000.
Togawa, Hideo: *See*—
Yoda, Kenichi; Togawa, Hideo; Ogawa, Eizou; and Kayahara, Masao, 4,395,136, Cl. 368-156.000.
Tohoku Kinzoku Kogyo Kabushiki Kaisha: *See*—
Tanaka, Hiroto; Kohno, Yasumasa; Tanaka, Hideyuki; and Sasaki, Kotaro, 4,395,746, Cl. 361-143.000.
Tokai Electric Wire Company Limited: *See*—
Inoue, Nori, 4,395,085, Cl. 339-94.00R.
Tokico Ltd.: *See*—
Oshima, Harumi, 4,394,891, Cl. 188-73.380.
Tokunaga, Koichi: *See*—
Tsurimoto, Hidetoshi; Tokunaga, Koichi; and Schonfeldt, Martin K., 4,395,175, Cl. 414-21.000.
Tokyo Shibaura Denki Kabushiki Kaisha: *See*—
Iwahashi, Hiroshi; and Asano, Masamichi, 4,395,724, Cl. 357-23.0VT.
Maeguchi, Kenji, 4,395,726, Cl. 357-41.000.
Nagakubo, Yoshihide; and Kohyama, Susumu, 4,395,433, Cl. 427-35.000.
Nakajima, Shunichi; and Odaira, Hiroshi, 4,395,109, Cl. 355-3.0FU.
Sanpei, Hideo; Matsuno, Kunio; Hirano, Shyoji; and Kumagai, Katuya, 4,395,435, Cl. 427-38.000.
Tada, Isao; Okamura, Toshio; Kousaka, Akira; and Nakai, Kaichiro, 4,395,657, Cl. 315-39.710.
Tominaga, Shinobu, to Alps Electric Co., Ltd. Pulse switch. 4,395,604, Cl. 200-74.000.
Tomizawa, Fumio; Sobata, Katsutoshi; Yoshimatsu, Yoshiaki; Saito, Sadayuki; Otani, Takashi; and Hirano, Senzaburo, to Ishikawajima-Harima Jukogyo Kabushiki Kaisha; and Kawasaki Seitetsu Kabushiki Kaisha. Shroud for steel making electric-arc furnace. 4,395,023, Cl. 266-158.000.
Tonn, Klaus, to VEB Kombinat Polygraph Werner Lamberz Leipzig. Non-linear control arrangement for printing machines. 4,395,667, Cl. 318-309.000.
Tonomura, Takashi, to Kabushiki Kaisha Fujikoshi. Quick-change holder. 4,395,051, Cl. 279-75.000.
Toray Industries, Inc.: *See*—
Hasegawa, Katsumi; Kawabata, Takahiro; and Kuge, Shintaro, 4,394,986, Cl. 242-18.00R.
Kashiwagi, Michio; and Nakajima, Kiichi, 4,395,485, Cl. 430-903.000.
Nakanishi, Toshiharu; Suzuki, Miyo; and Ohigashi, Hiroji, 4,395,652, Cl. 310-334.000.
Torck, Bernard: *See*—
Juguin, Bernard; Miquel, Jean; Hellin, Michel; and Torck, Bernard, 4,395,580, Cl. 585-639.000.
Torelli, Vesperto; Deraedt, Roger; and Nedelec, Lucien, to Roussel Uclaf. Novel steroids. 4,395,408, Cl. 424-238.000.
Torii, Kiyofumi: *See*—
Shimada, Minoru; and Torii, Kiyofumi, 4,395,623, Cl. 219-544.000.
Torisu, Yoshio; Sakurai, Shigenori; Kamo, Takashi; and Furutani, Toshinobu, to Toyota Jidosha Kogyo Kabushiki Kaisha. Lean sensor. 4,395,319, Cl. 204-426.000.
Torrington Company, The: *See*—
Lobeck, John H., 4,395,142, Cl. 384-192.000.
Torta, Mario, to Lifel di Torta E C. S.A.S. Mounting and guiding device for adjustable motor vehicle seats. 4,395,011, Cl. 248-393.000.
Toshiba Electric Equipment Corporation: *See*—
Aoike, Nanjou; Inui, Kenichi; and Koshimura, Yasunobu, 4,395,659, Cl. 315-209.00R.
Toshiba Silicones, Ltd.: *See*—
Shimizu, Chiyuki; and Hosokowa, Kiyoshi, 4,395,443, Cl. 427-387.000.
Toshio, Ikeda. Combustion apparatus. 4,394,839, Cl. 110-234.000.
Toumani, Rouben, to Bell Telephone Laboratories, Incorporated. Transformerless noninverting buck boost switching regulator. 4,395,675, Cl. 323-271.000.
Toyama Chemical Co., Ltd.: *See*—
Saikawa, Isamu; Takano, Shuntaro; Imaizumi, Hiroyuki; Takakura, Isamu; Ochiai, Hirokazu; Yasuda, Takashi; Taki, Hideo; Tai, Masaru; and Kodama, Yutaka, 4,395,412, Cl. 424-246.000.
Toyama, Noboru; and Oyamada, Yoshinori, to Hitachi, Ltd. Method of fabricating cathode-ray tube. 4,395,243, Cl. 445-6.000.
Toyo Communication Equipment Co., Ltd.: *See*—
Naito, Yukio; Tamura, Masahide; and Takahashi, Shigeo, 4,395,776, Cl. 455-119.000.
Toyo Electronics Corporation: *See*—
Tsutsumi, Kazuhiro; Tanoue, Genichiro; and Takaya, Yoshiaki, 4,395,705, Cl. 340-520.000.
Toyo Seikan Kaisha, Ltd.: *See*—
Kunimoto, Go; Ichinose, Isao; Suzuki, Noboru; and Mori, Fumio, 4,395,446, Cl. 428-35.000.
Taira, Kazuo; Morofuji, Akihiko; and Ueno, Hiroshi, 4,395,538, Cl. 528-272.000.
Toyoda, Toshihiro; Kawamata, Motoo; Osawa, Masanori; Itoh, Masayoshi; Mizutani, Kazumi; and Kono, Masahiro, to Mitsui Toatsu Chemical Incorporated. Process for the preparation of polyamide compounds by the reaction of polycarboxylic acids with diisocyanates in the presence of at least one mono-alkali metal salt of dicarboxylic acid. 4,395,531, Cl. 528-49.000.
Toyono, Tsutomu: *See*—
Kanbe, Junichiro; Toyono, Tsutomu; Hosono, Nagao; and Takahashi, Tohru, 4,395,476, Cl. 430-102.000.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See*—
Kubo, Seitoku; Kuramochi, Koujiro; and Kyushima, Tatsuo, 4,394,827, Cl. 74-868.000.
Torisu, Yoshio; Sakurai, Shigenori; Kamo, Takashi; and Furutani, Toshinobu, 4,395,319, Cl. 204-426.000.
Traub, Stefan, to Hewlett-Packard GmbH. Sine-shaping circuit. 4,395,642, Cl. 307-261.000.
Trested, Warren C., Jr., to Bell Telephone Laboratories, Incorporated. Line protection switch controller. 4,395,772, Cl. 375-40.000.
Trochoid Power Corporation: *See*—
Hoffmann, Benjamin, 4,395,206, Cl. 418-61.00A.
TRW Inc.: *See*—
McKee, William H., 4,395,089, Cl. 350-96.200.
Tschirch, Richard P.; and Sidman, Kenneth R., to United States of America, National Aeronautics and Space Administration. Heat sealable, flame and abrasion resistant coated fabric. 4,395,511, Cl. 524-371.000.
TSI Incorporated: *See*—
DuVall, Zell, 4,394,825, Cl. 73-861.090.
Tsuchiya, Yoshikazu: *See*—
Sato, Makoto; Ohmori, Taiji; and Tsuchiya, Yoshikazu, 4,395,761, Cl. 364-426.000.
Tsuda, Hiroshi; Miyashita, Kiyoshi; Shimizu, Akira; Nishikawa, Masaji; and Kasuga, Muneo, to Olympus Optical Co. Ltd. Conveyor unit for book carrier in electro-photographic copying machines. 4,395,115, Cl. 355-25.000.
Tsurimoto, Hidetoshi; Tokunaga, Koichi; and Schonfeldt, Martin K., to Mesco, Inc.; and Copper Refineries Pty. Ltd. Process for treating scrap anodes and apparatus therefor. 4,395,175, Cl. 414-21.000.

Tsutsui, Ken: *See*—
Sasano, Akira; Nakano, Toshio; Tsutsui, Ken; Hashimoto, Michiaki; Kaneko, Tadao; Taniguchi, Yoshio; Matsumaru, Haruo; and Izumi, Akiya, 4,395,629, Cl. 250-226.000.

Tsutsumi, Kazuhiro; Tanoue, Genichiro; and Takaya, Yoshiaki, to Toyo Electronics Corporation. Trouble-shooting circuit with first-failure identification capability. 4,395,705, Cl. 340-520.000.

Tuckey, Charles H.; and Romig, Alan D., to Walbro Corporation. Cowl mounted pulse control start valve. 4,394,852, Cl. 123-187.50R.

Turner, Richard L. Oil well pump. 4,395,204, Cl. 417-554.000.

Turtle Tractor Company: *See*—
Whyte, Garry R., 4,395,186, Cl. 414-528.000.

Tyler, David L.: *See*—
Lundy, Rene R.; and Tyler, David L., 4,395,600, Cl. 179-1.50M.

Tyler, Loren E. Positioning apparatus for boom structures. 4,394,968, Cl. 239-167.000.

Tyszkiewicz, Theodore J.: *See*—
Boden, Richard M.; Tyszkiewicz, Theodore J.; and Licciardello, Michael, 4,395,370, Cl. 260-463.000.

U C. Industries: *See*—
Phipps, Arthur L.; and Stoyanov, Ben, 4,395,214, Cl. 425-214.000.

Uchidoi, Masanori; and Urushihara, Kazunobu, to Canon Kabushiki Kaisha. Shutter time control circuit. 4,395,098, Cl. 354-23.00D.

UCO Optics, Inc.: *See*—
Wittmann, Joseph W.; and Evans, John M., 4,395,496, Cl. 523-107.000.

Ueda, Koichiro: *See*—
Noda, Kanji; Nakagawa, Akira; Haraguchi, Yasushi; Ueda, Koichiro; Hirano, Munehiko; Nishioka, Itsuo; Yagi, Akira; Koda, Akihide; and Ide, Hiroyuki, 4,395,405, Cl. 424-180.000.

Ueda, Shinjiro: *See*—
Yoshinaga, Yoichi; Nishida, Hideo; and Ueda, Shinjiro, 4,395,197, Cl. 415-211.000.

Ueno, Hiroshi: *See*—
Taira, Kazuo; Morofuji, Akihiko; and Ueno, Hiroshi, 4,395,538, Cl. 528-272.000.

Ueno, Susumu: *See*—
Imada, Kiyoshi; Ueno, Susumu; and Nomura, Hirokazu, 4,395,434, Cl. 427-38.000.

Ukmar, Boris: *See*—
Giacone, Felice; Becchi, Raffaele; and Ukmar, Boris, 4,395,145, Cl. 400-59.000.

Ulsky, Carl M., to KACA Corporation. Tire and refuse shredder. 4,394,983, Cl. 241-243.000.

Ulveling, Leon, to Paul Wurth S.A. Fluidization and distribution. 4,395,166, Cl. 406-124.000.

Umezawa, Hamao; Takeuchi, Tomio; Aoyagi, Takaaki; Hachisu, Mitsugu; Kawamura, Kenji; Fukatsu, Shunzo; and Sekizawa, Yasuharu, to Zaidan Hojin Biseibutsu Kagaku Kankyu Kai. Analgesic agent. 4,395,402, Cl. 424-177.000.

Undheim, Kjell: *See*—
Gacek, Mikkel J.; Oftebro, Reidar; Laland, Soren; and Undheim, Kjell, 4,395,406, Cl. 424-180.000.

Ungar, Israel S.: *See*—
Scher, Herbert I.; and Ungar, Israel S., 4,395,452, Cl. 428-148.000.

Unger, Herbert: *See*—
Meise, Gunther; and Unger, Herbert, 4,395,442, Cl. 427-236.000.

Union Carbide Corporation: *See*—
Chan, John K., 4,395,572, Cl. 564-399.000.
Chow, Sui-Wu; and Brode, George L., 4,395,520, Cl. 525-502.000.
Chow, Sui-Wu; and Brode, George L., 4,395,521, Cl. 525-502.000.
Kanner, Bernard; and Hopper, Steven P., 4,395,564, Cl. 556-470.000.
Kulkarni, Ravindra D.; Kanner, Bernard; and Goddard, Errol D., 4,395,352, Cl. 252-321.000.
Patel, Nandlal P.; and Dolida, Roger J., 4,394,929, Cl. 220-421.000.
Wagner, Burkhard E.; Karol, Frederick J.; Goeke, George L.; Jorgensen, Robert J.; and Friis, Nils, 4,395,359, Cl. 252-429.00B.

Uniroyal, Inc.: *See*—
Dekeyser, Mark A.; Pierce, Benjamin J.; Moore, Richard C.; and Hubbard, Winchester L., 4,395,551, Cl. 544-282.000.

United Kingdom Atomic Energy Authority: *See*—
Ginniff, Maurice E.; and Richardson, Eric K., 4,394,895, Cl. 198-339.000.

United States of America
Air Force: *See*—
Fritts, David H., 4,395,469, Cl. 429-34.000.
Goldie, Harry; and Patel, Suman D., 4,395,684, Cl. 333-13.000.
Army: *See*—
Esaki, Leo; and Chang, Chin A., 4,395,722, Cl. 357-16.000.
F'Geppert, Erwin, 4,395,062, Cl. 292-64.000.
Riggs, Dennis M.; and Harvey, Edward L., 4,395,299, Cl. 156-285.000.
Wurthman, Gunther E., 4,395,655, Cl. 315-4.000.
Energy: *See*—
Ritter, Don F.; St. Clair, Jack A.; and Togami, Henry K., 4,394,882, Cl. 175-89.000.
Health and Human Services: *See*—
Friauf, Walter S.; Brooks, Rodney A.; Sank, Victor J.; and Cascio, Horace E., 4,395,635, Cl. 250-366.000.
Tabor, Edward; and Gerety, Robert J., 4,395,395, Cl. 424-89.000.
National Aeronautics and Space Administration: *See*—
Averill, Robert D., 4,394,819, Cl. 62-514.00R.
Kosmahl, Henry G., 4,395,656, Cl. 315-4.000.
McClung, Charles E., 4,395,503, Cl. 523-440.000.
Minott, Peter O., 4,395,123, Cl. 356-353.000.
St. Clair, Terry L.; Wolfe, James F.; and Greenwood, Thomas D., 4,395,540, Cl. 528-345.000.
Tschirch, Richard P.; and Sidman, Kenneth R., 4,395,511, Cl. 524-371.000.
Varma, Indra K.; Fohlen, George M.; and Parker, John A., 4,395,557, Cl. 548-413.000.
Navy: *See*—
Baum, Kurt; Grakauskas, Vytautas; and Berkowitz, Phillip T., 4,395,561, Cl. 549-510.000.
Becker, Edward B., 4,395,235, Cl. 434-270.000.
Horton, Richard F., 4,395,095, Cl. 350-504.000.
Philippides, Constantinos; and Zinger, William H., 4,395,773, Cl. 375-116.000.
Rosendahl, Gottfried R.; and Dykes, Wiley V., 4,395,093, Cl. 350-441.000.
Stone, W. James; Burklund, Vernon D.; and Dillinger, Robert B., 4,395,001, Cl. 244-122.0AE.
Treasury: *See*—
Duvall, Kenneth R., 4,395,127, Cl. 356-430.000.

U.S. Philips Corporation: *See*—
Aarts, Petrus J. J.; Fleck, Harald; Kocsisek, Karl; and Schmidt, Ernst M., 4,395,745, Cl. 360-129.000.
Broeksema, Egbert; and Smeets, Arnoldus A., 4,395,211, Cl. 425-174.400.
Franssen, Nico V., deceased; de Haan, Friedrich J., administrator; Kaizer, Adrianus J. M.; and Wesche, Cornelis A. M., 4,395,588, Cl. 179-1.00F.
Goethals, Jean M. E. B.; and Krol, Thijs, 4,395,768, Cl. 371-45.000.
Knapp, Alan G., 4,395,437, Cl. 427-78.000.

United Technologies Corporation: *See*—
De Cosmo, Anthony R.; and Young, John H., 4,395,195, Cl. 415-137.000.
Smith, David C.; and Meyerand, Russell G., Jr., 4,395,616, Cl. 219-121.00L.

Universal Data Systems, Inc.: *See*—
Pierce, O. Leon; Smith, Mark C.; and Driver, R. Byron, 4,395,590, Cl. 179-2.0DP.

University of California, Regents of the: *See*—
Anger, Hal O.; Martin, Donn C.; and Lampton, Michael L., 4,395,636, Cl. 250-366.000.

Upton, Eric L., to Motorola Inc. Statistically adaptive analog to digital converter. 4,395,732, Cl. 358-169.000.

Ura, Hiroaki; Hirabayashi, Tsugio; and Koiso, Junichi, to Konishiroku Photo Industry Co., Ltd. Toner recovery device. 4,395,114, Cl. 355-15.000.

Urano, Fumio: *See*—
Kawasaki, Masahiro; Okura, Zenichi; and Urano, Fumio, 4,395,106, Cl. 354-271.000.

Urushihara, Kazunobu: *See*—
Uchidoi, Masanori; and Urushihara, Kazunobu, 4,395,098, Cl. 354-23.00D.

USM Corporation: *See*—
Bauer, Herbert; Piestert, Gerhard; and Gilch, Heinz G., 4,395,301, Cl. 156-307.500.

Usui, Motohachi: *See*—
Shimizu, Senzo; Nomura, Isao; Harada, Masahiro; Usui, Motohachi; Taniyama, Susumu; and Yanada, Shigeo, 4,395,534, Cl. 528-126.000.

Utsunomiya, Kimitake: *See*—
Osada, Yasuo; Nakagawa, Takeo; and Utsunomiya, Kimitake, 4,395,778, Cl. 455-276.000.

Valent, James A.: *See*—
Janssen, Donovan M.; Magno, Robert; Seaward, William S.; and Valent, James A., 4,395,033, Cl. 271-10.000.

Valiulis, Stanley J.; and Barnes, Richard D., to Southern Imperial, Inc. Guard for a hanger assembly. 4,394,909, Cl. 211-59.100.

Valmet Oy: *See*—
Manttari, Erkki; and Korpinen, Matti, 4,395,207, Cl. 418-102.000.

Van Brimer, R. Hugh: *See*—
Majewski, Henry A.; Salmre, William; and Van Brimer, R. Hugh, 4,395,719, Cl. 346-140.00R.

Van Brunt, Nicholas P.; and Ketzler, John H. A., to Control Data Corporation. Interconnect fault detector for LSI logic chips. 4,395,767, Cl. 371-25.000.

van den Haak, Rob. Anchor. 4,394,842, Cl. 114-304.000.

Vanderpool, Clarence D.; Scheithauer, Richard A.; and Gingerich, Richard G. W., to GTE Products Corporation. Method for producing cobalt metal powder. 4,395,278, Cl. 75-0.5AA.

Vandervorst, Jean: *See*—
Timmermans, Francis; and Vandervorst, Jean, 4,395,048, Cl. 277-65.000.

van Huuksloot, Leendert, to Nemag B.V. Grab. 4,395,066, Cl. 294-70.000.

Van Scoy, Davis A., to Grove Valve and Regulator Company. Orifice meter with isolation valve on the carrier. 4,394,826, Cl. 73-861.610.

Varghese, Philip: *See*—
Derbyshire, Francis J.; Varghese, Philip; and Whitehurst, Darrell D., 4,395,324, Cl. 208-56.000.

Varma, Indra K.; Fohlen, George M.; and Parker, John A., to United States of America, National Aeronautics and Space Administration. Phosphorus-containing imide resins. 4,395,557, Cl. 548-413.000.

Vasvari nee Debreczy, Lelle: *See*—
Hermecz, Istvan; Kokosi, Jozsef; Horvath, Agnes; Meszaros, Zoltan; Szasz, Gyorgy; Breining, Tibor; and Vasvari nee Debreczy, Lelle, 4,395,549, Cl. 544-252.000.

Vat Aktiengesellschaft Fur Vakuum-Apparate-Technik: *See*—
Schertler, Siegfried, 4,395,049, Cl. 277-236.000.

Vaughan, Dennis J.: *See*—
Herschdorfer, C. George; and Vaughan, Dennis J., 4,395,459, Cl. 428-391.000.

VEB Kombinat Polygraph Werner Lamberz: Leipzig: *See*—
Toan, Klaus, 4,395,667, Cl. 318-309.000.

Veltman, Jan S.; and Ferrari, Edward A. Hold open apparatus. 4,395,070, Cl. 296-1.00C.

Veney, Ruby G. Cosmetic composition and method of making the same. 4,395,424, Cl. 424-359.000.

Verdier, Henri: *See*—
Bienvenu, Jacques; Carre, Claude; Lun, Duc; and Verdier, Henri, 4,395,757, Cl. 364-200.000.

Vernitron Corporation: *See*—
Kackos, Edward M., 4,395,383, Cl. 422-112.000.

Vianova Kunstharz, A. G.: *See*—
Honig, Helmut; and Pampouchidis, Georgios, 4,395,502, Cl. 523-415.000.

Vicari, Frank. Multiple cutter rotary tool. 4,395,168, Cl. 408-20.000.

Victor Company of Japan: *See*—
Oono, Hirotoshi, 4,394,994, Cl. 242-200.000.

Victor Company of Japan, Ltd.: *See*—
Saito, Takashi; Hirano, Toshio; and Kumaki, Takashi, 4,395,744, Cl. 360-97.000.
Suzuki, Kiyoaki; Watanabe, Masaru; Yamamoto, Hisashi; Hayashi, Tomoharu; and Miura, Takuji, 4,395,597, Cl. 179-115.50R.

Vilain, Jean P.: *See*—
Berna, Michel; Kant, Michel; Vilain, Jean P.; and Seger, Rene, 4,395,669, Cl. 318-502.000.

Villiger, Alois: *See*—
Boller, Arthur; Germann, Alfred; Schadt, Martin; and Villiger, Alois, 4,395,350, Cl. 252-299.100.

Vinals, Joaquin F.: *See*—
Klemarczyk, Philip T.; Sanders, James M.; Vock, Manfred H.; Vinals, Joaquin F.; Schmitt, Frederick L.; and Granda, Edward J., 4,395,366, Cl. 252-545.000.

Vock, Manfred H.: *See*—
Klemarczyk, Philip T.; Sanders, James M.; Vock, Manfred H.; Vinals, Joaquin F.; Schmitt, Frederick L.; and Granda, Edward J., 4,395,366, Cl. 252-545.000.

Vogler, Franz, to Elvo Elektronik AG. Apparatus for cleaning soldering iron bits. 4,394,785, Cl. 15-21.00D.

Vogt, Max: *See*—
Weil, Wolfgang; Lanz, Andres; Vogt, Max; Meier, Paul; Kaul, Martin; and Fankhauser, Hanspeter, 4,395,614, Cl. 219-72.000.

von Alven, Raymond D.; and McGill, Lee E., to Cutter Laboratories, Inc. Closure for container. 4,394,919, Cl. 215-253.000.

Von Winckelmann, Emil H.: *See*—
Goldfarb, Adolph E.; and Von Winckelmann, Emil H., 4,395,041, Cl. 273-119.00A.

Voorhis, Roger J., to Carrier Corporation. Heat pump system. 4,394,816, Cl. 62-205.000.

Vossen, John L., Jr.; and Zelez, Joseph, to RCA Corporation. Transparent conductive film having areas of high and low resistivity. 4,395,467, Cl. 428-697.000.

W. C. Heraeus GmbH: *See*—
Scheidemann, Hans; Rieth, Alois; Sebralla, Bruno; and Wohlfart, Walter, 4,395,750, Cl. 362-239.000.

W. F. Industries, Inc.: *See*—
Terrell, Christopher E., 4,395,058, Cl. 281-46.000.

Waagner-Biro A.G.: *See*—
Weiss, Anton, 4,394,978, Cl. 241-23.000.

Wabco Fahrzeugbremsen GmbH: *See*—
Meise, Gunther; and Unger, Herbert, 4,395,442, Cl. 427-236.000.

Wagner, Burkhard E.; Karol, Frederick J.; Goeke, George L.; Jorgensen, Robert J.; and Friis, Nils, to Union Carbide Corporation. Polymerization catalyst, process for preparing, and use for ethylene homopolymerization. 4,395,359, Cl. 252-429.00B.

Wagner, Dieter: *See*—
Leutner, Bernd; Purucker, Berndhard; Rother, Eberhard; Juergens, Geerd F.; and Wagner, Dieter, 4,395,273, Cl. 71-11.000.

Wagner, Karl: *See*—
Luhrig, Hermann; Hoffacker, Franz; Kovacic, Guido; Engelsmann, Dieter; Zobel, Siegfried; Hackenberg, Hubert; and Wagner, Karl, 4,395,107, Cl. 354-275.000.

Wagner, Wilfried: *See*—
Weiler, Rolf; and Wagner, Wilfried, 4,394,833, Cl. 91-376.00R.

Wakabayashi, Takeshi: *See*—
Nakabayashi, Yasuyuki; Matsuura, Yoshio; Kurihara, Michio; Kamei, Takao; Nakamura, Akira; Komai, Keiichi; Shimotamari, Akira; and Wakabayashi, Takeshi, 4,395,334, Cl. 210-631.000.

Wakai, Katsuro, to Hitachi, Ltd. Information processing system and logout process therefor. 4,395,755, Cl. 364-200.000.

Walbro Corporation: *See*—
Tuckey, Charles H.; and Romig, Alan D., 4,394,852, Cl. 123-187.50R.

Wallis, William F.: *See*—
Springs, Thomas W.; and Wallis, William F., 4,395,213, Cl. 425-211.000.

Walter, Friedrich C., to Argus Verwaltungsgeselschaft mbH. Valve construction for quick-closure coupling. 4,394,874, Cl. 137-614.020.

Walter, Gerhard: *See*—
Pietsch, Gunter; Walter, Gerhard; Mewes, Gunter; and Schrader, Gert, 4,395,141, Cl. 384-147.000.

Walz, Kurt; Dittmann, Peter; and Hohne, Hartmut, to Lever Brothers Company. Free-flowing phosphate/silicate cogranulates containing hydrophobing substance(s). 4,395,345, Cl. 252-135.000.

Wang, Carl C. T.; Charles, Steve; and Buckingham, Joseph T., to Cooper Medical Devices. Linear intra-ocular suction device. 4,395,258, Cl. 604-65.000.

Wang, Daniel I. C.; and Avgerinos, George C., to Massachusetts Institute of Technology. Selective solvent extraction of cellulosic material. 4,395,543, Cl. 536-56.000.

Waniczek, Helmut; Suling, Carlhans; Lindner, Christian; and Bartl, Herbert, to Bayer Aktiengesellschaft. Modified olefine polymers. 4,395,517, Cl. 525-168.000.

Wanner, Karl: *See*—
Thome, Ludwig; Wanner, Karl; and Bretthauer, Karlheinz, 4,395,649, Cl. 310-15.000.

Ward, Frank L., to Clarostat Mfg. Co., Inc. Inductive sensor. 4,395,711, Cl. 340-870.310.

Ward, Irl E.; Hallquist, Lisa G.; and Hurley, Thomas J., to J. T. Baker Chemical Company. Stripping compositions and methods of stripping resists. 4,395,479, Cl. 430-258.000.

Wardman, John C.; and Adams, James Y. Energy generation system. 4,394,814, Cl. 60-641.150.

Warner & Swasey Company, The: *See*—
Schlafly, Paul W., 4,395,192, Cl. 414-718.000.

Wartski, Heinz, to Fleet Tech, Inc. Moving vehicle monitoring system. 4,395,624, Cl. 377-15.000.

Wartzok, Richard E.: *See*—
Ruda, Joseph C.; Wartzok, Richard E.; and Wedekind, Robert J., 4,394,951, Cl. 226-118.000.

Wasson, John J. Multi purpose head sweatband. 4,394,782, Cl. 2-181.000.

Waszkiewicz, E. Paul. Lamp dimmer circuit utilizing opto-isolators. 4,395,660, Cl. 315-291.000.

Watanabe, Hiroshi: *See*—
Izumi, Eiki; Watanabe, Hiroshi; Aoyagi, Yukio; Honma, Kazuo; and Nakajima, Kichio, 4,395,199, Cl. 417-53.000.

Watanabe, Junichi: *See*—
Minami, Syuji; Kashiwa, Norio; Kato, Akifumi; and Watanabe, Junichi, 4,395,519, Cl. 525-240.000.

Watanabe, Masaru: *See*—
Suzuki, Kiyoaki; Watanabe, Masaru; Yamamoto, Hisashi; Hayashi, Tomoharu; and Miura, Takuji, 4,395,597, Cl. 179-115.50R.

Watanabe, Teruoki; Kanno, Tadao; Hidaka, Akio; and Kobayashi, Shunji, to Honda Giken Kogyo Kabushiki Kaisha. Method and apparatus for the continuous furnace brazing and gas soft-nitriding treatments of iron articles. 4,395,025, Cl. 266-257.000.

Watanabe, Toshio: *See*—
Miyakawa, Nobuhiro; Shibata, Kiyoshi; Watanabe, Toshio; and Ohata, Yosuke, 4,395,112, Cl. 355-14.00D.

Watanabe, Yaichi. Amphibious bicycle. 4,395,237, Cl. 440-27.000.

Watanabe, Yoshiaki: *See*—
Tanaka, Yoshiharu; Watanabe, Yoshiaki; and Sasaki, Kou, 4,394,813, Cl. 60-618.000.

Watson, Allan M.: *See*—
Lembeck, Manfred; Kinsella, Patrick W.; and Watson, Allan M., 4,395,355, Cl. 252-373.000.

Wavin B.V.: *See*—
Herder, Kornelis; and Olderaan, Wilhelmus F. T. C., 4,395,379, Cl. 264-573.000.

Weaver, Max A.; and Coates, Clarence A., Jr., to Eastman Kodak Company. Azo dyes from 2-amino-5-organothio-1,3,4-thiadiazoles and N-cyanoethyl-m-acylamidoanilines. 4,395,368, Cl. 260-158.000.

Webasto-Werk W. Baier GmbH and Co.: *See*—
Mittmann, Bernd, 4,395,225, Cl. 431-62.000.

Webb Company, The: *See*—
Gruber, Damie C.; and Robichaud, Bernard J., 4,395,031, Cl. 270-54.000.

Wedekind, Robert J.: *See*—
Ruda, Joseph C.; Wartzok, Richard E.; and Wedekind, Robert J., 4,394,951, Cl. 226-118.000.

Wegmuller, Hans: *See*—
Hasse, Jeroslav; Liechti, Peter; Wegmuller, Hans; Wurster, Rudolf F.; and Bowes, Quentin, 4,395,546, Cl. 544-168.000.

Wehl, Glenn E., to Portage Electric Products, Inc. Thermostat construction employing aramide insulation. 4,395,694, Cl. 337-112.000.

Wei, Yung-Kang: *See*—
Briggs, George J.; and Wei, Yung-Kang, 4,395,501, Cl. 523-351.000.

Weidenhammer, Peter: *See*—
Marz, Dieter; Schmitt, Philipp; and Weidenhammer, Peter, 4,394,980, Cl. 241-46.020.

Weil, Wolfgang; Lanz, Andres; Vogt, Max; Meier, Paul; Kaul, Martin; and Fankhauser, Hanspeter, to Opprecht, Paul. Apparatus to suppress oxidation during resistance welding. 4,395,614, Cl. 219-72.000.

Weiler, Rolf; and Boehm, Peter, to ITT Industries, Inc. Brake booster for automotive vehicles. 4,394,832, Cl. 91-376.00R.

Weiler, Rolf; and Wagner, Wilfried, to ITT Industries, Inc. Brake booster. 4,394,833, Cl. 91-376.00R.

Weiner, Allan J.: *See*—
Barrett, Lawrence R.; and Weiner, Allan J., 4,395,075, Cl. 308-2.00R.

Weir, Charles R., to Masco Corporation. Method of manufacturing thin-walled corrosion resistant metallic objects. 4,395,303, Cl. 156-656.000.

Weir, E. Jack: *See*—
Egli, Werner H.; Setterholm, Jeffrey M.; and Weir, E. Jack, 4,394,831, Cl. 89-41.0EA.

Weirich, Walter; and Grommas, Werner, to Gewerkschaft Eisenhutte Westfalla. Actuator for a mine roof support unit. 4,394,875, Cl. 137-636.100.

Weis, Seigfried K.: *See*—
Smith, Harvey E., Sr.; and Weis, Seigfried K., 4,395,078, Cl. 308-196.000.

Weiss, Anton, to Waagner-Biro A.G. Method for treatment of waste metal and liquid dross. 4,394,978, Cl. 241-23.000.

Welker Engineering Company: *See*—
Welker, Robert H., 4,395,016, Cl. 251-5.000.

Welker, Robert H., to Welker Engineering Company. Axial flow regulator improvements including restrictor. 4,395,016, Cl. 251-5.000.

Wella Aktiengesellschaft: *See*—
Konrad, Eugen; and Mager, Herbert, 4,395,262, Cl. 8-410.000.

Welsh, Charles J., to Kerr-McGee Refining Corporation. Process for removing hydrogen sulfide from sour gas streams. 4,395,385, Cl. 423-234.000.

Werner Lehara, Inc.: *See*—
Fischer, Harry A.; Koepnick, Paul J.; Dennis, Thomas A.; and Anderson, Joseph R., 4,395,427, Cl. 426-231.000.

Werner & Pfleiderer: *See*—
Lambertus, Friedrich, 4,395,212, Cl. 425-185.000.

Wesche, Cornelis A. M.: *See*—
Franssen, Nico V., deceased; de Haan, Friedrich J., administrator; Kaizer, Adrianus J. M.; and Wesche, Cornelis A. M., 4,395,588, Cl. 179-1.00F.

West Company, The: *See*—
Wimmer, Hans, 4,394,922, Cl. 215-300.000.

West, William T.: *See*—
Goltz, Kurt; and West, William T., 4,395,387, Cl. 423-305.000.

Western Electric Co., Inc.: *See*—
Franken, Jeffrey J.; Gladney, Walter W.; and Yeich, William R., 4,395,219, Cl. 425-405.00R.
Kent, William C., 4,395,028, Cl. 269-50.000.

Westinghouse Electric Corp.: *See*—
Adam, John D., 4,395,686, Cl. 333-151.000.
Einolf, Charles W., Jr.; Szabo, Andras I.; and Crew, Albert W., 4,395,710, Cl. 340-825.500.
Gottlieb, Milton; and Brandt, Gerald B., 4,395,702, Cl. 340-347.0AD.
Isenberg, Arnold O., 4,395,468, Cl. 429-31.000.
Rizzelli, Frank D.; and Papadopoulos, Kimon, 4,395,432, Cl. 427-34.000.
Sherwood, Edward F.; and Orndorff, Karl B., 4,394,809, Cl. 52-512.000.

Westmont Industries: *See*—
Magnotte, John A., 4,395,180, Cl. 414-282.000.

Weston, William A. Float operated reed switches. 4,395,605, Cl. 200-84.00C.

Wetzel, Robert E.; Fieler, Wayne C.; and Hollaway, Gerald C., to Dayco Corporation. Method and apparatus for making toothed belts and belt made employing same. 4,395,298, Cl. 156-137.000.

Weyel KG Visuelle Einrichtungen: *See*—
Winn, Klaus; Engelbach, Klaus-Ludwig; and Schnirch, Leo, 4,395,080, Cl. 312-257.00R.

Whaley, Morris L. Self-leveling boat trailer. 4,395,185, Cl. 414-483.000.

Wharton, James H.; and James, Jack E., to RCA Corporation. Video disc slow down processor with reverse color detector/corrector. 4,395,737, Cl. 358-312.000.

White, David. Adjustable basketball goal. 4,395,040, Cl. 273-1.50R.

White, Dwain M.: *See*—
Giles, Harold F., Jr.; and White, Dwain M., 4,395,518, Cl. 525-180.000.

White, Jack D., to Sprague Electric Company. Low inductance electrolytic capacitor. 4,395,747, Cl. 361-433.000.

White, Mary A.; Beers, Melvin D.; Lucas, Gary M.; Smith, Robert A.; and Swiger, Roger T., to General Electric Company. One package, stable, moisture curable, polyalkoxy-terminated organopolysiloxane compositions and method for making. 4,395,526, Cl. 528-18.000.

Whitehurst, Darrell D.: *See*—
Derbyshire, Francis J.; Varghese, Philip; and Whitehurst, Darrell D., 4,395,324, Cl. 208-56.000.

Whitener, Philip C., to Boeing Company, The. Composite structural skin spar joint and method of making. 4,395,450, Cl. 428-116.000.

Whiteside, Darwin L. Wetting tension treating apparatus and method. 4,395,317, Cl. 204-165.000.

Whitman, Alfred, to Sprague Electric Company. Chemical etching of aluminum capacitor foil. 4,395,305, Cl. 156-665.000.

Whitney, John A.; and Rosenbrock, Richard, to Franklin Electric Co., Inc. Air flow and condition responsive damper. 4,394,958, Cl. 236-49.000.

Whyte, Garry R., to Turtle Tractor Company. Vehicle for tending low growing vegetation. 4,395,186, Cl. 414-528.000.

Whyte, Lance. Waste fluid receptacle. 4,394,877, Cl. 141-98.000.

Wick, Oswald J.: *See*—
Rohrmann, Charles A.; and Wick, Oswald J., 4,395,367, Cl. 252-629.000.

Wilber, Dennis A., to Cummins Engine Company, Inc. Solenoid operated fuel injector and control valve. 4,394,962, Cl. 239-88.000.

Wiley, Wallace F. Synchronizing system for oscillating mechanism. 4,395,137, Cl. 368-179.000.

Williams, Douglas J., to EECO Incorporated. Electro-acoustical structure. 4,395,589, Cl. 179-1.0SW.

Williams, Earl W.: *See*—
Raines, Charles D.; and Williams, Earl W., 4,394,955, Cl. 229-65.000.

Willis, Carl L.: *See*—
Slaugh, Lynn H.; and Willis, Carl L., 4,395,356, Cl. 252-413.000.

Wilson, Clive J., to Midland-Ross Corporation. Liner plate for grinding mills. 4,394,982, Cl. 241-183.000.

Wilson, Edwin B.; Eben, C. Frederick; Meyer, Charles L.; and Schaeffer, Charles W., to Bethlehem Steel Corporation. Transition plate for a mine roof truss. 4,395,161, Cl. 405-259.000.

Wilson, John T.: *See*—
Wilson, Lois B.; Wilson, John T.; and Geever, Robert F., 4,395,486, Cl. 435-6.000.

Wilson, Lois B.; Wilson, John T.; and Geever, Robert F., to Medical College of Ga. Research Inst., Inc. Method for the direct analysis of sickle cell anemia. 4,395,486, Cl. 435-6.000.

Wimmer, Hans, to West Company, The. Rubber stopper with plastic pull ring. 4,394,922, Cl. 215-300.000.

Winer, Brian A. Vegetation stem cutting apparatus. 4,394,796, Cl. 30-178.000.

Winn, Klaus; Engelbach, Klaus-Ludwig; and Schnirch, Leo, to Weyel KG Visuelle Einrichtungen. Construction set for the manufacture of frames for furniture. 4,395,080, Cl. 312-257.00R.

Wire Lab Company: *See*—
Stalson, Stanley L.; and Johns, William H., 4,394,786, Cl. 15-306.00A.

Wirholm, Stig; and Berggren, Soren, to Tellus Maskin AB. Loading device. 4,395,183, Cl. 414-416.000.

Wirth, David: *See*—
MacPhee, John; Wirth, David; and St. John, John, 4,394,870, Cl. 137-99.000.

Wirz, Armin: *See*—
Graf, Felix; and Wirz, Armin, 4,394,985, Cl. 242-18.0DD.

Wirz, Peter, to Klinger AG. Sealing arrangement specifically for shut off devices. 4,395,050, Cl. 277-236.000.

Wissinger, Lawrence H. Lantern holder. 4,395,013, Cl. 248-558.000.

Wittman, Leroy L.; and Jensen, Lyle B., to FMC Corporation. Heavy duty crane. 4,394,911, Cl. 212-189.000.

Wittmann, Heinz, to TMC Corporation. Ski brake. 4,395,054, Cl. 280-605.000.

Wittmann, Joseph W.; and Evans, John M., to UCO Optics, Inc. Cured cellulose ester, method of curing same, and use thereof. 4,395,496, Cl. 523-107.000.

Wohlfart, Walter: *See*—
Scheidemann, Hans; Rieth, Alois; Sebralla, Bruno; and Wohlfart, Walter, 4,395,750, Cl. 362-239.000.

Wolf, Horst: *See*—
Eistetter, Klaus; Rapp, Erich; and Wolf, Horst, 4,395,414, Cl. 424-258.000.

Wolfe, James F.: *See*—
St. Clair, Terry L.; Wolfe, James F.; and Greenwood, Thomas D., 4,395,540, Cl. 528-345.000.

Wolff, John S., III; Hemsworth, George R.; and Jensen, Keith E., to Pfizer Inc. Use of lipid amines formulated with fat or lipid emulsions as vaccine adjuvants. 4,395,394, Cl. 424-88.000.

Wolff, Kenneth T.: *See*—
Manktelow, Gerald; and Wolff, Kenneth T., 4,395,663, Cl. 315-403.000.

Wolgemuth, Richard L., to Adria Laboratories Inc. Method for treating kidney stones. 4,395,392, Cl. 424-78.000.

Womble, Larry E. Chain link repair device. 4,394,810, Cl. 59-7.000.

Wondergem, Hendrik M.; and Kaldenbach, Robert J. Frequency counter. 4,395,762, Cl. 364-484.000.

Wong, Simon F., to Sperry Corporation. Spindle assembly. 4,395,077, Cl. 308-189.00A.

Woo, Edmund P.: *See*—
Bertram, James L.; and Woo, Edmund P., 4,395,533, Cl. 528-77.000.

Wood, Laurior A.; and Humphries, Donald N. Chip coater. 4,394,844, Cl. 118-260.000.

Wood, Obert R., II: *See*—
Silfvast, William T.; Szeto, Leo H.; and Wood, Obert R., II, 4,395,770, Cl. 372-62.000.

Wristers, Harry J., to Exxon Research & Engineering Co. Titanium trichloride catalyst complex and process for the production thereof. 4,395,358, Cl. 252-429.00B.

Wurster, Rudolf F.: *See*—
Hasse, Jeroslav; Liechti, Peter; Wegmuller, Hans; Wurster, Rudolf F.; and Bowes, Quentin, 4,395,546, Cl. 544-168.000.

Wurthman, Gunther E., to United States of America, Army. High power gyrotron (OSC) or gyrotron type amplifier using light weight focusing for millimeter wave tubes. 4,395,655, Cl. 315-4.000.

Wyffels, Achiel, to Constructie Werkhuizen Vandekerckhove N.V. Stirring gear with internal heating. 4,395,132, Cl. 366-147.000.

Wyner, Jay S., to Therma-Plex Corporation. Thermal insulating and waterproofing of masonry structures by entrapment of multilayered dead air spaces with use of high speed injected liquid-air stream. 4,395,457, Cl. 428-312.400.

Xerox Corporation: *See*—
Crean, Peter A.; Schneider, John M.; and Lipani, Anthony F., 4,395,716, Cl. 346-1.100.
Grover, Joel W.; and Fischbeck, Kenneth H., 4,395,720, Cl. 346-140.00R.
Hauser, Oscar G.; and Ruckdeschel, Frederick R., 4,395,471, Cl. 430-45.000.

Yagi, Akira: *See*—
Noda, Kanji; Nakagawa, Akira; Haraguchi, Yasushi; Ueda, Koichiro; Hirano, Munehiko; Nishioka, Itsuo; Yagi, Akira; Koda, Akihide; and Ide, Hiroyuki, 4,395,405, Cl. 424-180.000.

Yamada Electric Industries, Co. Ltd.: *See*—
Harigai, Hiroshi, 4,395,619, Cl. 219-377.000.
Yamaguchi, Masaru: *See*—
Komori, Shigehiro; and Yamaguchi, Masaru, 4,395,118, Cl. 355-75.000.
Yamamoto, Hiroji, to Bee Brand Medico Dental Co., Ltd. Dental hemostatic composition. 4,395,398, Cl. 424-145.000.
Yamamoto, Hisashi: *See*—
Suzuki, Kiyoaki; Watanabe, Masaru; Yamamoto, Hisashi; Hayashi, Tomoharu; and Miura, Takuji, 4,395,597, Cl. 179-115.50R.
Yamamoto, Takaji: *See*—
Kondo, Yoshikazu; Yamamoto, Toshihiro; and Yamamoto, Takaji, 4,395,377, Cl. 264-46.100.
Yamamoto, Toshihiro: *See*—
Kondo, Yoshikazu; Yamamoto, Toshihiro; and Yamamoto, Takaji, 4,395,377, Cl. 264-46.100.
Yamamoto, Yujiro. Low energy relay using piezoelectric bender elements. 4,395,651, Cl. 310-317.000.
Yanada, Shigeo: *See*—
Shimizu, Senzo; Nomura, Isao; Harada, Masahiro; Usui, Motohachi; Taniyama, Susumu; and Yanada, Shigeo, 4,395,534, Cl. 528-126.000.
Yano, Masayoshi; and Hirose, Fuminori, to Matsushita Electric Industrial Co., Ltd. Plastic molded mesh screen covering for audio cabinets. 4,395,079, Cl. 312-7.100.
Yano, Yasuhiro: *See*—
Eida, Tsuyoshi; Yano, Yasuhiro; Haruta, Masahiro; Matsufuji, Yohji; and Ohta, Tokuya, 4,395,288, Cl. 106-22.000.
Yasuda, Takashi: *See*—
Saikawa, Isamu; Takano, Shuntaro; Imaizumi, Hiroyuki; Takakura, Isamu; Ochiai, Hirokazu; Yasuda, Takashi; Taki, Hideo; Tai, Masaru; and Kodama, Yutaka, 4,395,412, Cl. 424-246.000.
Yasuhira, Shuji; and Naka, Shinichi, to Sharp Kabushiki Kaisha. Discharge type ignitor for oil stove. 4,395,229, Cl. 431-261.000.
Yeich, William R.: *See*—
Franken, Jeffrey J.; Gladney, Walter W.; and Yeich, William R., 4,395,219, Cl. 425-405.00R.
Yoda, Kenichi; Togawa, Hideo; Ogawa, Eizou; and Kayahara, Masao, to Matsushita Electric Works, Ltd.; and Matsushita Electric Industrial Co., Ltd. Electronic timer. 4,395,136, Cl. 368-156.000.
Yohji, Terui; Isao, Koga; and Nobumasa, Ohtake, to Chisso Corporation. Vinylidene-silicon-compound and a process for its production. 4,395,562, Cl. 556-431.000.
Yokobori, Nobuyoshi; Maeda, Tetsuo; and Igarashi, Yoshiaki, to Matsushita Electric Industrial Co., Ltd. Differential output circuit. 4,395,682, Cl. 330-260.000.
Yonezawa, Kazuya; Asada, Masahiro; and Matsuura, Miyuki, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Polyether resin and method of manufacturing the same. 4,395,537, Cl. 528-219.000.
Yoshida, Akira: *See*—
Ohki, Eiji; Oida, Sadao; Yoshida, Akira; Hayashi, Teruo; and Sugawara, Shinichi, 4,395,418, Cl. 424-270.000.
Yoshida, Gen: *See*—
Terakado, Ryoji; Iwasa, Masaru; Takahashi, Ituo; Anzawa, Norio; and Yoshida, Gen, 4,395,021, Cl. 266-85.000.
Yoshimatsu, Yoshiaki: *See*—
Tomizawa, Fumio; Sobata, Katsutoshi; Yoshimatsu, Yoshiaki; Saito, Sadayuki; Otani, Takashi; and Hirano, Senzaburo, 4,395,023, Cl. 266-158.000.
Yoshinaga, Yoichi; Nishida, Hideo; and Ueda, Shinjiro, to Hitachi, Ltd. Centrifugal fluid machine. 4,395,197, Cl. 415-211.000.
Yoshioka, Yoshitomo, to K.K. Yoshioka Seisakusho. Automatic apparatus for supplying a fixed quantity of particle or powder. 4,394,942, Cl. 222-361.000.
Young, Gary A.: *See*—
Swenson, Gerald R.; Swenson, Emil S.; and Young, Gary A., 4,394,784, Cl. 5-453.000.
Young, John H.: *See*—
De Cosmo, Anthony R.; and Young, John H., 4,395,195, Cl. 415-137.000.
Young, John W. Book holder. 4,395,057, Cl. 281-42.000.
Young, Robert F.: *See*—
Hall, Charles B.; McBride, Edward D.; and Young, Robert F., 4,395,239, Cl. 440-61.000.
Young, Rodney C.: *See*—
Durant, Graham J.; Ganellin, Charon R.; and Young, Rodney C., 4,395,419, Cl. 424-270.000.
Yuen, Aubrey; and Battista, William P. Apparatus and method for locating and presenting pre-recorded information. 4,395,740, Cl. 360-72.200.
Zabelka, Jaroslav. Hot gas cooler for a coal gasification plant. 4,395,268, Cl. 48-67.000.
Zaccheroni, Giulio, to S.p.A. Officine Maccaferri gia Raffaele Maccaferri & Figli. Process for making gabions provided with inner partitions. 4,394,924, Cl. 220-19.000.
Zaffrann, Albert A.; Borchardt, Robert E.; and Nelson, Grant W., to Allen-Bradley Company. Disconnect switch with line-side contact module. 4,395,606, Cl. 200-144.00R.
Zahl, Gero: *See*—
Oeckl, Siegfried; Zahl, Gero; and Radt, Walter, 4,395,371, Cl. 260-464.000.
Zahniser, David J.; and Garcia, Gerardo L., to Coulter Electronics, Inc. Monolayer device using filter techniques. 4,395,493, Cl. 435-289.000.
Zaidan Hojin Biseibutsu Kagaku Kankyu Kai: *See*—
Umezawa, Hamao; Takeuchi, Tomio; Aoyagi, Takaaki; Hachisu, Mitsugu; Kawamura, Kenji; Fukatsu, Shunzo; and Sekizawa, Yasuharu, 4,395,402, Cl. 424-177.000.
Zambrano, Adolfo R., to Hanna Mining Company, The. Recovery of nickel from waste materials. 4,395,315, Cl. 204-112.000.
Zayats, Valery I.: *See*—
Medovar, Boris I.; Gladky, Evgeny D.; Bondarenko, Oleg P.; Chekotilo, Leonty V.; Zayats, Valery I.; Egorov, Sergei P.; and Skosnyagin, Jury A., 4,395,771, Cl. 373-49.000.
Zbrojovka Vsetin, narodni podnik: *See*—
Hruby, Jan; and Pleskac, Karel, 4,394,988, Cl. 242-47.120.
Zelez, Joseph: *See*—
Vossen, John L., Jr.; and Zelez, Joseph, 4,395,467, Cl. 428-697.000.
Zenith Radio Corporation: *See*—
Krenz, Horst M., 4,395,151, Cl. 400-320.000.
Rypkema, Jouke N., 4,395,734, Cl. 358-194.100.
Ziegler, Hans: *See*—
Hagen, Helmut; Ziegler, Hans; Mappes, Celia J.; and Pommer, Ernst-Heinrich, 4,395,415, Cl. 424-263.000.
Zimin, Vladimir M.: *See*—
Golubkov, Sergei V.; Druzhinin, Ernest A.; Zimin, Vladimir M.; Kubasov, Vladimir L.; Lvovich, Florenty I.; and Mazanko, Anatoly F., 4,395,314, Cl. 204-98.000.
Zimmer, Max: *See*—
Mathis, Paul; and Zimmer, Max, 4,395,128, Cl. 366-18.000.
Zimmermann, Rolf: *See*—
Fischer, Hannes; and Zimmermann, Rolf, 4,395,525, Cl. 526-307.600.
Zinaida, Zosim: *See*—
Gutnick, David L.; Rosenberg, Eugene; Belsky, Igal; and Zinaida, Zosim, 4,395,353, Cl. 252-356.000.
Gutnick, David L.; Rosenberg, Eugene; Belsky, Igal; and Zinaida, Zosim, 4,395,354, Cl. 252-356.000.
Zinger, William H.: *See*—
Philippides, Constantinos; and Zinger, William H., 4,395,773, Cl. 375-116.000.
Zobel, Siegfried: *See*—
Luhrig, Hermann; Hoffacker, Franz; Kovacic, Guido; Engelsmann, Dieter; Zobel, Siegfried; Hackenberg, Hubert; and Wagner, Karl, 4,395,107, Cl. 354-275.000.
Zysset, Edgar H., to General Can Company, Inc. Metallic convenience closure. 4,394,927, Cl. 220-273.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 26TH DAY OF JULY, 1983

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Amery, John G.; and Jorgenson, Robert W., to RCA Corporation. Signal translating apparatus for composite signal subject to jitter. Re. 31,326, Cl. 358-322.000.

Apotheker, David, deceased (by Delaware, Bank of, executor), to Du Pont de Nemours, E. I., and Company. Fluorine containing organo-silicon compounds. Re. 31,324, Cl. 556-445.000.

Audi NSU Auto Union Aktiengesellschaft: *See*—
Hoser, Alfred, Re. 31,320, Cl. 123-549.000.

Crapo, Roland L., to Superior Electric Company, The. Stepping AC line voltage regulator. Re. 31,325, Cl. 323-263.000.

Delaware, Bank of, executor: *See*—
Apotheker, David, deceased, Re. 31,324, Cl. 556-445.000.

Du Pont de Nemours, E. I., and Company: *See*—
Apotheker, David, deceased, Re. 31,324, Cl. 556-445.000.

Field, Nathan D.: *See*—
Marder, Herman L.; Field, Nathan D.; and Shinohara, Makoto, Re. 31,323, Cl. 536-87.000.

Halm Industries Co. Inc.: *See*—
Harrison, Henry, deceased, Re. 31,321, Cl. 126-422.000.

Handa, Kohichi: *See*—
Ohishi, Tetsu; Handa, Kohichi; and Ueno, Haruo, Re. 31,322, Cl. 526-230.000.

Harrison, Dorothy D., administratrix: *See*—
Harrison, Henry, deceased, Re. 31,321, Cl. 126-422.000.

Harrison, Henry, deceased (by Harrison, Dorothy D., administratrix), to Halm Industries Co. Inc. Solar heating system. Re. 31,321, Cl. 126-422.000.

Hoser, Alfred, to Audi NSU Auto Union Aktiengesellschaft. Self-regulating heater. Re. 31,320, Cl. 123-549.000.

International Playtex, Inc.: *See*—
Marder, Herman L.; Field, Nathan D.; and Shinohara, Makoto, Re. 31,323, Cl. 536-87.000.

Jorgenson, Robert W.: *See*—
Amery, John G.; and Jorgenson, Robert W., Re. 31,326, Cl. 358-322.000.

Marder, Herman L.; Field, Nathan D.; and Shinohara, Makoto, to International Playtex, Inc. Preparation of water-insoluble carboxy-methyl cellulose absorbents. Re. 31,323, Cl. 536-87.000.

Nippon Zeon Co. Ltd.: *See*—
Ohishi, Tetsu; Handa, Kohichi; and Ueno, Haruo, Re. 31,322, Cl. 526-230.000.

Ohishi, Tetsu; Handa, Kohichi; and Ueno, Haruo, to Nippon Zeon Co. Ltd. Process for producing sulfur-curable acrylic rubbers. Re. 31,322, Cl. 526-230.000.

Peterson, Max E., to Rockwell International Corporation. Proportional digital control for radio frequency synthesizers. Re. 31,327, Cl. 455-157.000.

RCA Corporation: *See*—
Amery, John G.; and Jorgenson, Robert W., Re. 31,326, Cl. 358-322.000.

Rockwell International Corporation: *See*—
Peterson, Max E., Re. 31,327, Cl. 455-157.000.

Shinohara, Makoto: *See*—
Marder, Herman L.; Field, Nathan D.; and Shinohara, Makoto, Re. 31,323, Cl. 536-87.000.

Superior Electric Company, The: *See*—
Crapo, Roland L., Re. 31,325, Cl. 323-263.000.

Ueno, Haruo: *See*—
Ohishi, Tetsu; Handa, Kohichi; and Ueno, Haruo, Re. 31,322, Cl. 526-230.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Cenker, Ronald P.; and Procyk, Frank J., to Bell Telephone Laboratories Incorporated. Memory with redundant rows and columns. Bl 4,228,528, Cl. 365—200.

Bell Telephone Laboratories Incorporated: *See*—
Cenker, Ronald P.; and Procyk, Frank J. B1 4,228,528, Cl. 365—200.

LIST OF DESIGN PATENTEES

Aho, Yrjo, to Exel Oy. Post for an electric fence. 269,912, 7-26-83, Cl. D25-77.000.

Albright, Edward E.: *See*—
Goodin, John W.; Albright, Edward E.; and Tamura, Amy K., 269,857, Cl. D10-15.000.

Allison Corporation: *See*—
Seltzer, Samuel M.; and Dennison, Saul, 269,868, Cl. D13-10.000.

Alter, H. Ward, to Terradex Corp. Compact radon detector unit. 269,858, 7-26-83, Cl. D10-47.000.

Altonaga, Richard C., to New Hermes Incorporated. Picture frame. 269,838, 7-26-83, Cl. D6-242.000.

American Safety Razor Company: *See*—
Iten, Clemens A.; and Chase, David O., 269,915, Cl. D28-46.000.

Amos, Homer C., to Brunswick Corporation. Ball catching and throwing device. 269,891, 7-26-83, Cl. D21-210.000.

Amos, Homer C., to Brunswick Corporation. Ball catching and throwing device. 269,892, 7-26-83, Cl. D21-210.000.

Amos, Homer C., to Brunswick Corporation. Ball catching and throwing device. 269,893, 7-26-83, Cl. D21-210.000.

Associated Mills, Inc.: *See*—
Pruzan, Ira, 269,836, Cl. D6-188.000.

Bedell, Rickie T.: *See*—
Cavnar, Kathryn A.; Ligon, Charles E.; and Bedell, Rickie T., 269,883, Cl. D21-59.000.

Beer, Thomas E. Physical exercise support. 269,889, 7-26-83, Cl. D21-191.000.

Beitner, Shlomo, to Bipol Ltd. Refrigerator cabinet suitable for use on railroads and in other vehicles subject to considerable vibration. 269,877, 7-26-83, Cl. D15-81.000.

Bianchi, John E.; Nichols, Richard D. E.; Pachmayr, Frank A.; Farrar, Jack R.; and Farrar, Frank W., to Bianchi Leather Products, Inc. Handgun grip. 269,895, 7-26-83, Cl. D22-1.000.

Bianchi Leather Products, Inc.: *See*—
Bianchi, John E.; Nichols, Richard D. E.; Pachmayr, Frank A.; Farrar, Jack R.; and Farrar, Frank W., 269,895, Cl. D22-1.000.

Bipol Ltd.: *See*—
Beitner, Shlomo, 269,877, Cl. D15-81.000.

Brown, Shadrack, Jr. Vestmental pin. 269,861, 7-26-83, Cl. D11-76.000.

Brunswick Corporation: *See*—
Amos, Homer C., 269,891, Cl. D21-210.000.
Amos, Homer C., 269,892, Cl. D21-210.000.
Amos, Homer C., 269,893, Cl. D21-210.000.

Cavnar, Kathryn A.; Ligon, Charles E.; and Bedell, Rickie T., to CPG Products Corp. Combined carrying case and tethered toys. 269,883, 7-26-83, Cl. D21-59.000.

Cerasari, Nicholas P. Baby bottle medicant device. 269,906, 7-26-83, Cl. D24-47.000.

Chase, David O.: *See*—
Iten, Clemens A.; and Chase, David O., 269,915, Cl. D28-46.000.

Chubb, Wayne L. Multiple key holder. 269,833, 7-26-83, Cl. D6-114.000.

Clairol Incorporated: *See*—
Kuta, Raymond F., 269,856, Cl. D9-418.000.

Claman, Mike T., to Lewittes Furniture Enterprises, Inc. Chair. 269,829, 7-26-83, Cl. D6-57.000.

Clark, Frank, to Tantera, Inc. Angle broom. 269,827, 7-26-83, Cl. D4-03.000.

Cole National Corporation: *See*—
Noble, Howard E., Jr., 269,878, Cl. D15-124.000.

Combi Co., Ltd.: *See*—
Nakao, Shinroku; Ishii, Yoshiyasu; and Hanashima, Taira, 269,884, Cl. D21-65.000.
Nakao, Shinroku; Ishii, Yoshiyasu; and Hanashima, Taira, 269,885, Cl. D21-65.000.
Nakao, Shinroku; Ishii, Yoshiyasu; and Hanashima, Taira, 269,886, Cl. D21-65.000.
Nakao, Shinroku; Ishii, Yoshiyasu; and Matsumoto, Susumu, 269,887, Cl. D21-162.000.

Commisso, Nicholas D., to Mobil Oil Corporation. Packaging container for food or the like. 269,854, 7-26-83, Cl. D9-347.000.

Consolidated Foods Corporation: *See*—
Knabb, Harry P., 269,835, Cl. D6-181.000.

Cosden Technology, Inc.: *See*—
Fortuna, Vincent E., 269,855, Cl. D9-398.000.

Covey, Laird F., to Stanley Works, The. Handle for a saw blade. 269,848, 7-26-83, Cl. D8-97.000.

CPG Products Corp.: *See*—
Cavnar, Kathryn A.; Ligon, Charles E.; and Bedell, Rickie T., 269,883, Cl. D21-59.000.

Crane, Frank M. Chair. 269,832, 7-26-83, Cl. D6-76.000.

Crone, Barry W., to Fixtures Manufacturing Corporation. Molded shell stack chair. 269,831, 7-26-83, Cl. D6-75.000.

Daiwa Seiko, Inc.: *See*—
Yamamoto, Shigeru, 269,898, Cl. D22-24.000.

Danish Stove Association, ApS: *See*—
Sorensen, Winston J. F., 269,901, Cl. D23-97.000.

Dart Industries Inc.: *See*—
Goodin, John W.; Albright, Edward E.; and Tamura, Amy K., 269,857, Cl. D10-15.000.

Dembricks, Andrew E., to Southern Case, Inc. Tool tray or the like. 269,918, 7-26-83, Cl. D34-44.000.

Dennison, Saul: *See*—
Seltzer, Samuel M.; and Dennison, Saul, 269,868, Cl. D13-10.000.

Designers & Art Directors Association of London, The: *See*—
Springett, Rod, 269,853, Cl. D9-326.000.

Development Corporation of America: *See*—
Obarowski, John S., 269,909, Cl. D25-23.000.

Doman, Donald W.: *See*—
Johnson, Robert W.; and Doman, Donald W., 269,913, Cl. D26-63.000.

Drag Specialties, Inc.: *See*—
Preisler, James M.; and Stahel, Alwin J., 269,850, Cl. D8-303.000.

Duff, Charles B., to Farnam Companies, Inc. Fly trap. 269,897, 7-26-83, Cl. D22-19.000.

Dunlop Limited: *See*—
Tomoda, Hiroshi, 269,865, Cl. D12-143.000.

Edwards, Bradford L. Combined air freshener and photo frame or similar article. 269,902, 7-26-83, Cl. D23-150.000.

Espedalen, Kare. Tire chain for slip prevention of vehicle. 269,866, 7-26-83, Cl. D12-154.000.

Exel Oy: *See*—
Aho, Yrjo, 269,912, Cl. D25-77.000.

Exide Electronics Corporation: *See*—
Johnson, Robert W.; and Doman, Donald W., 269,913, Cl. D26-63.000.

Farnam Companies, Inc.: *See*—
Duff, Charles B., 269,897, Cl. D22-19.000.

Farrar, Frank W.: *See*—
Bianchi, John E.; Nichols, Richard D. E.; Pachmayr, Frank A.; Farrar, Jack R.; and Farrar, Frank W., 269,895, Cl. D22-1.000.

Farrar, Jack R.: *See*—
Bianchi, John E.; Nichols, Richard D. E.; Pachmayr, Frank A.; Farrar, Jack R.; and Farrar, Frank W., 269,895, Cl. D22-1.000.

Fixtures Manufacturing Corporation: *See*—
Crone, Barry W., 269,831, Cl. D6-75.000.

Fortuna, Vincent E., to Cosden Technology, Inc. Packaging container. 269,855, 7-26-83, Cl. D9-398.000.

Frieberg, Bengt O. Lock washer. 269,852, 7-26-83, Cl. D8-399.000.

General Electric Company: *See*—
Huntington, Robert R., 269,874, Cl. D14-63.000.

General Mills Products Corp.: *See*—
Meyer, Muriel, 269,862, Cl. D11-82.000.
Meyer, Muriel, 269,863, Cl. D11-83.000.

Givens, John H., III. Barbecue grill. 269,839, 7-26-83, Cl. D7-334.000.

Goodin, John W.; Albright, Edward E.; and Tamura, Amy K., to Dart Industries Inc. Electronic clock/timer. 269,857, 7-26-83, Cl. D10-15.000.

Greene, Leslie C. Step stool. 269,828, 7-26-83, Cl. D6-33.000.

Hackerson, John V., to Hackerson, Mabel J., a part interest. Device for extracting soil cores for laboratory analysis. 269,844, 7-26-83, Cl. D8-7.000.

Hackerson, Mabel J.: *See*—
Hackerson, John V., 269,844, Cl. D8-7.000.

Haggard, Merry: *See*—
Haggard, Robert E., 269,843, Cl. D8-01.000.

Haggard, Robert E., to Haggard, Merry. Tree guard. 269,843, 7-26-83, Cl. D8-01.000.

Hanashima, Taira: *See*—
Nakao, Shinroku; Ishii, Yoshiyasu; and Hanashima, Taira, 269,884, Cl. D21-65.000.
Nakao, Shinroku; Ishii, Yoshiyasu; and Hanashima, Taira, 269,885, Cl. D21-65.000.
Nakao, Shinroku; Ishii, Yoshiyasu; and Hanashima, Taira, 269,886, Cl. D21-65.000.

Harada, Toshio: *See*—
Tanaka, Michio; Yamamura, Masamichi; and Harada, Toshio, 269,840, Cl. D7-351.000.
Yamamura, Masamichi; and Harada, Toshio, 269,841, Cl. D7-351.000.
Yamamura, Masamichi; and Harada, Toshio, 269,842, Cl. D7-351.000.

Hennessy Industries, Inc.: *See*—
Holladay, Jim L.; and Leeper, Charles G., 269,879, Cl. D15-199.000.

Hirabayashi, Tsugio; and Nakai, Michio, to Sony Corporation. Tennis ball projector for training purposes. 269,894, 7-26-83, Cl. D21-210.000.

Hirsh, Ethan; and Taylor, Michael L. Font of type. 269,881, 7-26-83, Cl. D18-24.000.

Holladay, Jim L.; and Leeper, Charles G., to Hennessy Industries, Inc. Tire changer. 269,879, 7-26-83, Cl. D15-199.000.

Humanicare International Inc.: *See*—
Tong, David P., 269,907, Cl. D24-50.000.

Huntington, Robert R., to General Electric Company. Telephone handset. 269,874, 7-26-83, Cl. D14-63.000.

Hutchins, Alma A., to Hutchins Manufacturing Co. Abrading tool. 269,845, 7-26-83, Cl. D8-62.000.

Hutchins Manufacturing Co.: *See*—
Hutchins, Alma A., 269,845, Cl. D8-62.000.

Iijima, Takekazu, to Pioneer Kabushiki Kaisha. Loudspeaker. 269,870, 7-26-83, Cl. D14-30.000.

Ishida, Katsuhiro, to Sharp Corporation. Electronic translator. 269,875, 7-26-83, Cl. D14-100.000.

Ishii, Yoshiyasu: *See*—
Nakao, Shinroku; Ishii, Yoshiyasu; and Hanashima, Taira, 269,884, Cl. D21-65.000.
Nakao, Shinroku; Ishii, Yoshiyasu; and Hanashima, Taira, 269,885, Cl. D21-65.000.
Nakao, Shinroku; Ishii, Yoshiyasu; and Hanashima, Taira, 269,886, Cl. D21-65.000.
Nakao, Shinroku; Ishii, Yoshiyasu; and Matsumoto, Susumu, 269,887, Cl. D21-162.000.

Ishizaki, Hideaki, to Pioneer Kabushiki Kaisha. Loudspeaker. 269,871, 7-26-83, Cl. D14-34.000.

Ishizaki, Hideaki, to Pioneer Kabushiki Kaisha. Loudspeaker. 269,872, 7-26-83, Cl. D14-34.000.

Iten, Clemens A.; and Chase, David O., to American Safety Razor Company. Disposable safety razor. 269,915, 7-26-83, Cl. D28-46.000.

Iwasaki, Osamu, to Slik Tripod Co., Ltd. Camera tripod. 269,880, 7-26-83, Cl. D16-45.000.

Izumisawa, Osamu. Air grinder. 269,846, 7-26-83, Cl. D8-62.000.

Izumisawa, Osamu. Air grinder. 269,847, 7-26-83, Cl. D8-62.000.

Jan Stenerud and Company Inc.: *See*—
Stenerud, Jan, 269,890, Cl. D21-209.000.

Johansson, Ake K. Combination articulation rail and connecting bar for screen walls and similar articles. 269,910, 7-26-83, Cl. D25-74.000.

Johnson, Robert W.; and Doman, Donald W., to Exide Electronics Corporation. Adjustable lamp. 269,913, 7-26-83, Cl. D26-63.000.

Kabushiki Kaisha Suwa Seikosha: *See*—
Tanikawa, Kenji; Uchihori, Noritaka; and Suzuki, Susumu, 269,860, Cl. D10-125.000.

Kanzaka, Yoshihiro, to Yoshida Kogyo K.K. Hook fastener for garments. 269,824, 7-26-83, Cl. D2-418.000.

Kimura, Shigeru, to Nifco Inc. Retainer clip for pipes, rods and other elongated bodies or the like. 269,851, 7-26-83, Cl. D8-356.000.

Knabb, Harry P., to Consolidated Foods Corporation. Bottle retaining support rack. 269,835, 7-26-83, Cl. D6-181.000.

Ko, Bonnie H. C. Handbag. 269,826, 7-26-83, Cl. D3-44.000.

Kuta, Raymond F., to Clairol Incorporated. Transparent dispenser box. 269,856, 7-26-83, Cl. D9-418.000.

Larson, Kenneth W.: *See*—
Nagele, Albert L.; and Larson, Kenneth W., 269,873, Cl. D14-53.000.

Lee, Bruce N. Occasional table. 269,834, 7-26-83, Cl. D6-146.000.

Leeper, Charles G.: *See*—
Holladay, Jim L.; and Leeper, Charles G., 269,879, Cl. D15-199.000.

Lents, Charles M., to Stainless IceTainerCompany. Sanitary countertop machine for storing and dispensing particulate ice and for dispensing beverage. 269,876, 7-26-83, Cl. D15-80.000.

Leverton, Floyd J. Martial arts mannequin. 269,882, 7-26-83, Cl. D19-59.000.

Lewittes Furniture Enterprises, Inc.: *See*—
Claman, Mike T., 269,829, Cl. D6-57.000.

Ligon, Charles E.: *See*—
Cavnar, Kathryn A.; Ligon, Charles E.; and Bedell, Rickie T., 269,883, Cl. D21-59.000.

Lodrick, Lawrence. Dog houses. 269,916, 7-26-83, Cl. D30-1.000.

Lucous, Robert W. Sealing strip. 269,911, 7-26-83, Cl. D25-74.000.

Matsubara, Hideyuki, to Pioneer Kabushiki Kaisha. Loudspeaker. 269,869, 7-26-83, Cl. D14-30.000.

Matsumoto, Susumu: *See—*
Nakao, Shinroku; Ishii, Yoshiyasu; and Matsumoto, Susumu, 269,887, Cl. D21-162.000.

Matsushita Electric Industrial Co., Ltd.: *See—*
Tanaka, Michio; Yamamura, Masamichi; and Harada, Toshio, 269,840, Cl. D7-351.000.
Yamamura, Masamichi; and Harada, Toshio, 269,841, Cl. D7-351.000.
Yamamura, Masamichi; and Harada, Toshio, 269,842, Cl. D7-351.000.

Meyer, Muriel, to General Mills Products Corp. Segmented fish-shaped pendant or similar article. 269,862, 7-26-83, Cl. D11-82.000.

Meyer, Muriel, to General Mills Products Corp. Segmented heart-shaped pendant or similar article. 269,863, 7-26-83, Cl. D11-83.000.

Mobil Oil Corporation: *See—*
Commisso, Nicholas D., 269,854, Cl. D9-347.000.

Morgan, Clyde R. Bicycle handlebar grip. 269,849, 7-26-83, Cl. D8-303.000.

Motorola, Inc.: *See—*
Nagele, Albert L.; and Larson, Kenneth W., 269,873, Cl. D14-53.000.

Murry, Edsel E. Combined seat and backrest unit. 269,837, 7-26-83, Cl. D6-191.000.

Nagele, Albert L.; and Larson, Kenneth W., to Motorola, Inc. Portable radio telephone or similar article. 269,873, 7-26-83, Cl. D14-53.000.

Nakai, Michio: *See—*
Hirabayashi, Tsugio; and Nakai, Michio, 269,894, Cl. D21-210.000.

Nakao, Shinroku; Ishii, Yoshiyasu; and Hanashima, Taira, to Combi Co., Ltd. Toy rattle. 269,884, 7-26-83, Cl. D21-65.000.

Nakao, Shinroku; Ishii, Yoshiyasu; and Hanashima, Taira, to Combi Co., Ltd. Toy rattle. 269,885, 7-26-83, Cl. D21-65.000.

Nakao, Shinroku; Ishii, Yoshiyasu; and Hanashima, Taira, to Combi Co., Ltd. Toy rattle. 269,886, 7-26-83, Cl. D21-65.000.

Nakao, Shinroku; Ishii, Yoshiyasu; and Matsumoto, Susumu, to Combi Co., Ltd. Animal figure toy. 269,887, 7-26-83, Cl. D21-162.000.

New Hermes Incorporated: *See—*
Altonaga, Richard C., 269,838, Cl. D6-242.000.

Nichols, Richard D. E.: *See—*
Bianchi, John E.; Nichols, Richard D. E.; Pachmayr, Frank A.; Farrar, Jack R.; and Farrar, Frank W., 269,895, Cl. D22-1.000.

Nifco Inc.: *See—*
Kimura, Shigeru, 269,851, Cl. D8-356.000.

Nijhuis, Klaas. Chair or similar article. 269,830, 7-26-83, Cl. D6-68.000.

Noble, Howard E., Jr., to Cole National Corporation. Lens block. 269,878, 7-26-83, Cl. D15-124.000.

Obarowski, John S., to Development Corporation of America. Multiple-occupancy residential building or similar article. 269,909, 7-26-83, Cl. D25-23.000.

Olympus Optical Company Ltd.: *See—*
Shimonaka, Hideki, 269,904, Cl. D24-18.000.
Shirako, Hideo; Saito, Shoichi; Wada, Terumasa; and Yamamoto, Koki, 269,825, Cl. D3-35.000.

Otsuka, Kiyoshi. Bar of soap. 269,914, 7-26-83, Cl. D28-8.100.

Pachmayr, Frank A.: *See—*
Bianchi, John E.; Nichols, Richard D. E.; Pachmayr, Frank A.; Farrar, Jack R.; and Farrar, Frank W., 269,895, Cl. D22-1.000.

Paladini, Ariel G. Sensing antenna housing for a theft detection system. 269,859, 7-26-83, Cl. D10-121.000.

Payton, Hugh W. Walking splint. 269,908, 7-26-83, Cl. D24-64.000.

Pioneer Kabushiki Kaisha: *See—*
Iijima, Takekazu, 269,870, Cl. D14-30.000.
Ishizaki, Hideaki, 269,871, Cl. D14-34.000.
Ishizaki, Hideaki, 269,872, Cl. D14-34.000.
Matsubara, Hideyuki, 269,869, Cl. D14-30.000.

Preisler, James M.; and Stahel, Alwin J., to Drag Specialties, Inc. Handlebar grip. 269,850, 7-26-83, Cl. D8-303.000.

Pruzan, Ira, to Associated Mills, Inc. Display stand for massage implements. 269,836, 7-26-83, Cl. D6-188.000.

Quandt, Robert S., to Sybron Corporation. Vacuum firing porcelain furnace. 269,903, 7-26-83, Cl. D24-08.000.

Rupp, Joretta. Doll. 269,888, 7-26-83, Cl. D21-173.000.

Ryobi Ltd.: *See—*
Shohoji, Takeshi; and Sakamoto, Masakazu, 269,899, Cl. D22-25.000.

Saito, Shoichi: *See—*
Shirako, Hideo; Saito, Shoichi; Wada, Terumasa; and Yamamoto, Koki, 269,825, Cl. D3-35.000.

Sakamoto, Masakazu: *See—*
Shohoji, Takeshi; and Sakamoto, Masakazu, 269,899, Cl. D22-25.000.

Seecamp, Louis W. Pistol. 269,896, 7-26-83, Cl. D22-1.000.

Seltzer, Samuel M.; and Dennison, Saul, to Allison Corporation. Battery tray. 269,868, 7-26-83, Cl. D13-10.000.

Sharp Corporation: *See—*
Ishida, Katsuhiro, 269,875, Cl. D14-100.000.

Shimano Industrial Company Limited: *See—*
Watanabe, Satoshi, 269,864, Cl. D12-124.000.
Watanabe, Satoshi, 269,867, Cl. D12-179.000.

Shimonaka, Hideki, to Olympus Optical Company Ltd. Endoscope. 269,904, 7-26-83, Cl. D24-18.000.

Shirako, Hideo; Saito, Shoichi; Wada, Terumasa; and Yamamoto, Koki, to Olympus Optical Co., Ltd. Coupling adaptor for a magnetic tape cassette accommodating case. 269,825, 7-26-83, Cl. D3-35.000.

Shiverdecker, Howard P. Lure for fishing. 269,900, 7-26-83, Cl. D22-28.000.

Shohoji, Takeshi; and Sakamoto, Masakazu, to Ryobi Ltd. Fishing reel. 269,899, 7-26-83, Cl. D22-25.000.

Slik Tripod Co., Ltd.: *See—*
Iwasaki, Osamu, 269,880, Cl. D16-45.000.

Sony Corporation: *See—*
Hirabayashi, Tsugio; and Nakai, Michio, 269,894, Cl. D21-210.000.

Sorensen, Winston J. F., to Danish Stove Association, ApS. Stove. 269,901, 7-26-83, Cl. D23-97.000.

Southern Case, Inc.: *See—*
Dembricks, Andrew E., 269,918, Cl. D34-44.000.

Spann, Donald C. Houshold cleaning mop. 269,917, 7-26-83, Cl. D32-51.000.

Springett, Rod, to Designers & Art Directors Association of London, The. Packaging container for promotional material. 269,853, 7-26-83, Cl. D9-326.000.

Stahel, Alwin J.: *See—*
Preisler, James M.; and Stahel, Alwin J., 269,850, Cl. D8-303.000.

Stainless IceTainerCompany: *See—*
Lents, Charles M., 269,876, Cl. D15-80.000.

Stanley Works, The: *See—*
Covey, Laird F., 269,848, Cl. D8-97.000.

Stenerud, Jan, to Jan Stenerud and Company Inc. Football kicking tee. 269,890, 7-26-83, Cl. D21-209.000.

Suzuki, Susumu: *See—*
Tanikawa, Kenji; Uchihori, Noritaka; and Suzuki, Susumu, 269,860, Cl. D10-125.000.

Sybron Corporation: *See—*
Quandt, Robert S., 269,903, Cl. D24-08.000.

Tamm, Ulf S. Occlusive sphygmanometer for the measuring of arterial blood pressure. 269,905, 7-26-83, Cl. D24-21.000.

Tamura, Amy K.: *See—*
Goodin, John W.; Albright, Edward E.; and Tamura, Amy K., 269,857, Cl. D10-15.000.

Tanaka, Michio; Yamamura, Masamichi; and Harada, Toshio, to Matsushita Electric Industrial Co., Ltd. Microwave oven. 269,840, 7-26-83, Cl. D7-351.000.

Tanikawa, Kenji; Uchihori, Noritaka; and Suzuki, Susumu, to Kabushiki Kaisha Suwa Seikosha. Display panel for timepiece. 269,860, 7-26-83, Cl. D10-125.000.

Tantera, Inc.: *See—*
Clark, Frank, 269,827, Cl. D4-03.000.

Taylor, Michael L.: *See—*
Hirsh, Ethan; and Taylor, Michael L., 269,881, Cl. D18-24.000.

Terradex Corp.: *See—*
Alter, H. Ward, 269,858, Cl. D10-47.000.

Tomoda, Hiroshi, to Dunlop Limited. Tire for a vehicle wheel. 269,865, 7-26-83, Cl. D12-143.000.

Tong, David P., to Humanicare International Inc. Incontinence garment. 269,907, 7-26-83, Cl. D24-50.000.

Uchihori, Noritaka: *See—*
Tanikawa, Kenji; Uchihori, Noritaka; and Suzuki, Susumu, 269,860, Cl. D10-125.000.

Wada, Terumasa: *See—*
Shirako, Hideo; Saito, Shoichi; Wada, Terumasa; and Yamamoto, Koki, 269,825, Cl. D3-35.000.

Watanabe, Satoshi, to Shimano Industrial Company Limited. Derailleur for a bicycle. 269,864, 7-26-83, Cl. D12-124.000.

Watanabe, Satoshi, to Shimano Industrial Company Limited. Brake for a bicycle. 269,867, 7-26-83, Cl. D12-179.000.

Yamamoto, Koki: *See—*
Shirako, Hideo; Saito, Shoichi; Wada, Terumasa; and Yamamoto, Koki, 269,825, Cl. D3-35.000.

Yamamoto, Shigeru, to Daiwa Seiko, Inc. Line guide. 269,898, 7-26-83, Cl. D22-24.000.

Yamamura, Masamichi; and Harada, Toshio, to Matsushita Electric Industrial Co., Ltd. Microwave oven. 269,841, 7-26-83, Cl. D7-351.000.

Yamamura, Masamichi; and Harada, Toshio, to Matsushita Electric Industrial Co., Ltd. Microwave oven. 269,842, 7-26-83, Cl. D7-351.000.

Yamamura, Masamichi: *See—*
Tanaka, Michio; Yamamura, Masamichi; and Harada, Toshio, 269,840, Cl. D7-351.000.

Yoshida Kogyo K.K.: *See—*
Kanzaka, Yoshihiro, 269,824, Cl. D2-418.000.

LIST OF PLANT PATENTEES

James, Leonard D. Almond tree ("Mesa"). 5,073, 7-26-83, Cl. 30.000.

Pan American Plant Company: *See—*
Shoesmith, Leonard H., 5,076, Cl. 74.000.

Peters, Alvin. Plum tree (AP-3). 5,074, 7-26-83, Cl. 38.000.

Shoesmith, Leonard H., to Pan American Plant Company. Chrysanthemum named Firebrand (FP6-143-BS). 5,076, 7-26-83, Cl. 74.000.

van Heiningen, Dirk. Wilton pyramidal hybrid yew tree. 5,075, 7-26-83, Cl. 50.000.

CLASSIFICATION OF PATENTS

ISSUED JULY 26, 1983

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2

67 4,394,781
181 4,394,782

CLASS 5

432 4,394,783
453 4,394,784

CLASS 8

111 4,395,261
410 4,395,262
471 4,395,263
662 4,395,264

CLASS 15

21 D 4,394,785
306 A 4,394,786

CLASS 16

58 4,394,787
334 4,394,788

CLASS 19

97 4,394,789
105 4,394,790

CLASS 24

30.5 R 4,394,791
230 A 4,394,792

CLASS 29

116 AD 4,394,793
432 4,394,794
739 4,394,795

CLASS 30

178 4,394,796

CLASS 33

244 4,394,797
335 4,394,798
343 4,394,799
443 4,394,800
496 4,394,801

CLASS 34

27 4,394,802

CLASS 36

51 4,394,803

CLASS 44

15 R 4,395,265
51 4,395,266
56 4,395,267

CLASS 46

250 4,394,804

CLASS 48

67 4,395,268

CLASS 49

55 4,394,805

CLASS 52

172 4,394,806
332 4,394,807
483 4,394,808
512 4,394,809

CLASS 55

302 4,395,269

CLASS 59

7 4,394,810

CLASS 60

39.28 R 4,394,811
600 4,394,812
618 4,394,813
641.15 4,394,814
649 4,394,815

CLASS 62

205 4,394,816
235 4,394,817
239 4,394,818
514 R 4,394,819

CLASS 65

3.12 4,395,270
31 4,395,271
99.5 4,395,272

CLASS 70

34 4,394,820
422 4,394,821

CLASS 71

11 4,395,273
67 4,395,274
87 4,395,275
4,395,276
94 4,395,277

CLASS 72

235 4,394,822

CLASS 73

119 A 4,394,823
606 4,394,824
861.09 4,394,825
861.61 4,394,826

CLASS 74

868 4,394,827

CLASS 75

0.5 AA 4,395,278
0.5 BB 4,395,279
28 4,395,280
53 4,395,281
58 4,395,282
60 4,395,283
123 CB 4,395,284
256 4,395,285

CLASS 81

9.51 4,394,828

CLASS 83

314 4,394,829

CLASS 84

1.15 4,394,830

CLASS 89

41 EA 4,394,831

CLASS 91

376 R 4,394,832
4,394,833

CLASS 100

245 4,394,834

CLASS 101

177 4,394,835

CLASS 102

485 4,394,836

CLASS 104

28 4,394,837

CLASS 106

14.13 4,395,286
20 4,395,287
22 4,395,288
98 4,395,289
100 4,395,290
297 4,395,291

CLASS 110

234 4,394,838
4,394,839

CLASS 112

121.15 4,394,840

CLASS 114

26 4,394,841
304 4,394,842

CLASS 116

63 P 4,394,843

CLASS 118

260 4,394,844
303 4,394,845

CLASS 119

2 4,394,846
75 4,394,847

CLASS 122

13 R 4,394,848
235 K 4,394,849

CLASS 123

41.74 4,394,850
182 4,394,851
187.5 R 4,394,852
195 C 4,394,853
198 F 4,394,854
254 4,394,855
506 4,394,856
549 Re.31,320

CLASS 126

60 4,394,857
400 4,394,858
422 Re.31,321
438 4,394,859
439 4,394,860

CLASS 127

29 4,395,292

CLASS 128

205.25 4,394,861
321 4,394,864
782 4,394,865
785 4,394,866

CLASS 134

104 4,394,867

CLASS 136

246 4,395,581
248 4,395,582
256 4,395,583

CLASS 137

68 A 4,394,868
82 4,394,869
99 4,394,870
115 4,394,871
315 4,394,872
613 4,394,873
614.02 4,394,874
636.1 4,394,875

CLASS 141

98 4,394,877
137 4,394,876

CLASS 144

131 4,394,878

CLASS 148

1.5 4,395,293
6.14 R 4,395,294
11.5 C 4,395,295
12.4 4,395,296

CLASS 156

64 4,395,297
137 4,395,298
285 4,395,299
294 4,395,300
307.5 4,395,301
642 4,395,302
656 4,395,303
657 4,395,304
665 4,395,305

CLASS 162

156 4,395,306
157.3 4,395,307
232 4,395,308

CLASS 164

76.1 4,394,879

CLASS 174

15 S 4,395,584
138 G 4,395,585
138 J 4,395,586

CLASS 175

69 4,394,880
76 4,394,881
89 4,394,882
304 4,394,883
321 4,394,884

CLASS 177

210 C 4,394,885

CLASS 178

30 4,395,587

CLASS 179

1 F 4,395,588
4,395,593
1 SW 4,395,589
1.5 M 4,395,600
2 DF 4,395,590
2 EB 4,395,594
84 VF 4,395,595
99 LC 4,395,596
100 R 4,395,591
115 V 4,395,592
115.5 R 4,395,597
4,395,598
170 NC 4,395,599
179 4,395,601

CLASS 180

140 4,394,886

CLASS 182

214 4,394,887

CLASS 187

1 R 4,394,888
29 R 4,394,889

CLASS 188

71.9 4,394,890
73.38 4,394,891
196 BA 4,394,892

CLASS 192

1 4,394,893

CLASS 198

339 4,394,894
4,394,895
341 4,394,896
345 4,394,897
374 4,394,898
408 4,394,899
436 4,394,902
614 4,394,900
850 4,394,901

CLASS 200

50 AA 4,395,602
61.87 4,395,603
74 4,395,604
84 C 4,395,605
144 R 4,395,606
148 R 4,395,607
153 L 4,395,608
153 LA 4,395,609
292 4,395,610
314 4,395,611

CLASS 201

22 4,395,309

CLASS 203

2 4,395,310
34 4,395,311

CLASS 204

1 T 4,395,312
30 4,395,313
98 4,395,314
112 4,395,315
129 4,395,316
165 4,395,317
206 4,395,320
252 4,395,321
290 F 4,395,322
298 4,395,323
404 4,395,318
426 4,395,319

CLASS 206

427 4,394,903
447 4,394,904
486 4,394,905
525 4,394,906

CLASS 208

56 4,395,324
113 4,395,325
188 4,395,326
216 R 4,395,327
251 H 4,395,328
4,395,329
309 4,395,330

CLASS 209

556 4,394,907

CLASS 210

329 4,395,331
496 4,395,332
510 4,395,333
631 4,395,334
675 4,395,335
693 4,395,336
703 4,395,337
747 4,395,338
761 4,395,339

CLASS 211

1.5 4,394,908
59.1 4,394,909
490 4,394,910

CLASS 212

189 4,394,911
4,394,912
4,394,913
203 4,394,914

CLASS 215

12 R 4,394,915
220 4,394,916
232 4,394,917
243 4,394,918
253 4,394,919
4,394,920
296 4,394,921
300 4,394,922
329 4,394,923

CLASS 219

69 E 4,395,613
69 P 4,395,612
72 4,395,614
79 4,395,615
121 L 4,395,616
145.1 4,395,617
298 4,395,618
377 4,395,619
378 4,395,620
492 4,395,621
522 4,395,622
544 4,395,623

CLASS 220

19 4,394,924
86 R 4,394,925
89 A 4,394,926
273 4,394,927
366 4,394,928
421 4,394,929
444 4,394,930
453 4,394,931

CLASS 221

83 4,394,932
173 4,394,933

CLASS 222

5 4,394,934
35 4,394,935
107 4,394,936
189 4,394,937
207 4,394,938
4,394,939
276 4,394,940
355 4,394,941
361 4,394,942
456 4,394,943
553 4,394,944
571 4,394,945

CLASS 223

115 4,394,946

CLASS 224

42.43 4,394,947
314 4,394,948

CLASS 226

76 4,394,949
97 4,394,950
118 4,394,951

CLASS 227

7 4,394,952

CLASS 228

124 4,394,953

CLASS 229

17 G 4,394,954
65 4,394,955

CLASS 231

2 E 4,394,956

CLASS 235

98 C 4,395,625
381 4,395,626
4,395,627
382 4,395,628

CLASS 236

49 4,394,957
4,394,958

CLASS 237

2 B 4,394,959
12.3 C 4,394,960

CLASS 238

10 R 4,394,961

CLASS 239

88 4,394,962
89 4,394,963
90 4,394,964
102 4,394,965
127 4,394,966
133 4,394,967
167 4,394,968
414 4,394,969
453 4,394,970
4,394,971
4,394,972
467 4,394,973
585 4,394,974
654 4,394,975
679 4,394,976

CLASS 241

21 4,394,977
23 4,394,978
26 4,394,979
46.02 4,394,980
46.17 4,394,981
183 4,394,982
243 4,394,983
278 R 4,394,984

CLASS 242

18 DD 4,394,985
18 R 4,394,986
46.2 4,394,987
47.12 4,394,988
55.19 A 4,394,989
65 4,394,990
84.1 R 4,394,991
85 4,394,992
107.4 A 4,394,993
200 4,394,994
207 4,394,995
222 4,394,996

CLASS 244

3.16 4,394,997
31 4,394,998
78 4,394,999
118.3 4,395,000
122 AE 4,395,001
136 4,395,002
137 R 4,395,003
158 R 4,395,004
161 4,395,005
4,395,006
215 4,395,007
4,395,008

CLASS 248

68 CB 4,395,009
371 4,395,010
393 4,395,011
545 4,395,012
558 4,395,013

CLASS 249

9 4,395,014
115 4,395,015

CLASS 250

226 4,395,629
237 G 4,395,630
251 4,395,631
343 4,395,632
357.1 4,395,633
359.1 4,395,634

366 4,395,635
4,395,636
551 4,395,637
554 4,395,638

CLASS 251

5 4,395,016
306 4,395,017
310 4,395,018
357 4,395,019

CLASS 252

8.55 D 4,395,340
4,395,341
8.75 4,395,342
32.7 E 4,395,343
99 4,395,344
135 4,395,345
4,395,346
139 4,395,347
143 4,395,348
182 4,395,349
299.1 4,395,350
315.1 4,395,351
321 4,395,352
356 4,395,353
4,395,354
373 4,395,355
413 4,395,356
428 4,395,357
429 B 4,395,358
4,395,359
4,395,360
431 C 4,395,361
511 4,395,362
526 4,395,363
4,395,364
545 4,395,365
4,395,366
629 4,395,367

CLASS 254

10.5 4,395,020

CLASS 260

158 4,395,368
453 P 4,395,369
463 4,395,370
464 4,395,371
465 R 4,395,372
928 4,395,373
941 4,395,374

CLASS 264

40.1 4,395,375
46.1 4,395,377
73 4,395,376
532 4,395,378
573 4,395,379

CLASS 266

85 4,395,021
106 4,395,022
158 4,395,023
252 4,395,024
257 4,395,025
265 4,395,026

CLASS 269

25 4,395,027
50 4,395,028
57 4,395,029
181 4,395,030

CLASS 270

54 4,395,031

CLASS 271

10 4,395,032
4,395,033
21 4,395,034
97 4,395,035
171 4,395,036
188 4,395,037
195 4,395,038

CLASS 272

126 4,395,039

CLASS 273

1.5 R 4,395,040
119 A 4,395,041
176 B 4,395,042
239 4,395,043
253 4,395,044
312 4,395,045
424 4,395,046

CLASS 277

3 4,395,047
65 4,395,048
236 4,395,049
4,395,050

CLASS 279

75 4,395,051

CLASS 280

5 C 4,395,052
47.34 4,395,053
605 4,395,054
624 4,395,055

CLASS 281

31 4,395,056
42 4,395,057
46 4,395,058

CLASS 282

29 B 4,395,059

CLASS 285

39 4,395,060
281 4,395,061

CLASS 292

64 4,395,062
150 4,395,063
201 4,395,064
339 4,395,065

CLASS 294

70 4,395,066
74 4,395,067
78 R 4,395,068
87.22 4,395,069

CLASS 296

1 C 4,395,070

CLASS 297

440 4,395,071

CLASS 303

114 4,395,072
116 4,395,073

CLASS 305

43 4,395,074

CLASS 307

66 4,395,639
115 4,395,640
116 4,395,641
261 4,395,642
264 4,395,643
270 4,395,644
450 4,395,645
468 4,395,646
540 4,395,647

CLASS 308

2 R 4,395,075
189 A 4,395,077
196 4,395,078

CLASS 310

10 4,395,648
15 4,395,649
82 4,395,650
317 4,395,651
334 4,395,652

CLASS 312

7.1 4,395,079
257 R 4,395,080

CLASS 313

112 4,395,653
496 4,395,654

CLASS 315

4 4,395,655
4,395,656
39.71 4,395,657
134 4,395,658
209 R 4,395,659
291 4,395,660
360 4,395,661
371 4,395,662
403 4,395,663

CLASS 318

112 4,395,664
114 4,395,665
139 4,395,666
309 4,395,667
439 4,395,668
502 4,395,669
758 4,395,670
786 4,395,671

CLASS 320

31 4,395,672
61 4,395,673

CLASS 323

210 4,395,674
263 Re.31,325
271 4,395,675

CLASS 324

71.4 4,395,676
117 H 4,395,677
132 4,395,678
379 4,395,679
392 4,395,680

CLASS 330

259 4,395,681
260 4,395,682

CLASS 331

2 4,395,683

CLASS 333

13 4,395,684
125 4,395,685
151 4,395,686
164 4,395,687
169 4,395,688
195 4,395,689
214 4,395,690

CLASS 335

210 4,395,691
284 4,395,692

CLASS 336

223 4,395,693

CLASS 337

112 4,395,694

CLASS 338

32 H 4,395,695

CLASS 339

14 R 4,395,081
41 4,395,082
59 R 4,395,083
75 MP 4,395,084
94 R 4,395,085
176 M 4,395,086
278 R 4,395,087

CLASS 340

74 4,395,696
347 AD 4,395,702
4,395,703
347 NT 4,395,701
365 S 4,395,704
520 4,395,705
685 4,395,706
703 4,395,707
784 4,395,708
4,395,709
825.5 4,395,710
870.31 4,395,711

CLASS 343

7.3 4,395,712
713 4,395,713
725 4,395,714

CLASS 346

1.1 4,395,715
4,395,716
75 4,395,717
135.1 4,395,718
140 R 4,395,719
4,395,720
160 4,395,721

CLASS 350

3.7 4,395,088
96.20 4,395,089
166 4,395,090
319 4,395,091
427 4,395,092
441 4,395,093
467 4,395,094
504 4,395,095
560 4,395,096

CLASS 351

201 4,395,097

CLASS 354

23 D 4,395,098
31 4,395,099
33 4,395,100
128 4,395,101
187 4,395,102
212 4,395,103
230 4,395,104
246 4,395,105
271 4,395,106
275 4,395,107

CLASS 355

1 4,395,108
3 DD 4,395,110
3 FU 4,395,109
14 D 4,395,112
14 R 4,395,111
15 4,395,113
4,395,114
25 4,395,115
32 4,395,116
43 4,395,117
75 4,395,118

CLASS 356

73 4,395,119
125 4,395,120
152 4,395,121
237 4,395,122
353 4,395,123
373 4,395,124
400 4,395,125
417 4,395,126
430 4,395,127

CLASS 357

16 4,395,722
23 4,395,723
4,395,725
23 VT 4,395,724
41 4,395,726
71 4,395,727
82 4,395,728

CLASS 358

21 R 4,395,729
29 4,395,730
88 4,395,731
189 4,395,732
183 4,395,733
194.1 4,395,734
198 4,395,735
213 4,395,736
312 4,395,737
322 Re.31,326
335 4,395,738

CLASS 360

61 4,395,739
72.2 4,395,740
77 4,395,741
78 4,395,742
90 4,395,743
97 4,395,744
129 4,395,745

CLASS 361

143 4,395,746
433 4,395,747

CLASS 362

8 4,395,748
83 4,395,749
239 4,395,750

CLASS 363

134 4,395,751

CLASS 364

130 4,395,752
200 4,395,753
4,395,754
4,395,755
4,395,756
4,395,757
4,395,758
410 4,395,759
4,395,760
426 4,395,761
484 4,395,762
900 4,395,763

CLASS 365

200 B1 4,228,528
78 4,395,764
174 4,395,765

CLASS 366

18 4,395,128
25 4,395,129
137 4,395,130
141 4,395,131
147 4,395,132
241 4,395,133

CLASS 368

3 4,395,134
63 4,395,135
156 4,395,136
179 4,395,137
204 4,395,138

CLASS 369

47 4,395,766

CLASS 371

25 4,395,767
45 4,395,768

CLASS 372

7 4,395,769
62 4,395,770

CLASS 373

49 4,395,771

CLASS 374

178 4,395,139

CLASS 375

40 4,395,772
116 4,395,773

CLASS 376

247 4,395,380
293 4,395,381

CLASS 377

15 4,395,624
114 4,395,774

CLASS 378

145 4,395,775

CLASS 382

27 4,395,698
4,395,700
41 4,395,697
4,395,699

CLASS 384

92 4,395,076
99 4,395,140
147 4,395,141
192 4,395,142
221 4,395,143

CLASS 400

30 4,395,144
59 4,395,145
121 4,395,146
144.2 4,395,147
212 4,395,148
215 4,395,149
285 4,395,150
320 4,395,151
569 4,395,152

CLASS 402

15 4,395,153

CLASS 403

172 4,395,154

CLASS 404

9 4,395,155
110 4,395,156

CLASS 405

60 4,395,157
161 4,395,158
172 4,395,159
195 4,395,160
259 4,395,161
261 4,395,162
303 4,395,163

CLASS 406

74 4,395,164
88 4,395,165
124 4,395,166

CLASS 407

54 4,395,167

CLASS 408

20 4,395,168
59 4,395,169
241 R 4,395,170
4,395,171

CLASS 410

84 4,395,172

CLASS 411

387 4,395,173
510 4,395,174

CLASS 414

21 4,395,175
57 4,395,176
130 4,395,177
138 4,395,178
161 4,395,179
282 4,395,180
284 4,395,181
299 4,395,182
416 4,395,183
417 4,395,184
483 4,395,185
528 4,395,186
557 4,395,187
622 4,395,188
635 4,395,189
664 4,395,190
694 4,395,191
718 4,395,192
722 4,395,193
786 4,395,194

CLASS 415

137 4,395,195
174 4,395,196
211 4,395,197
219 R 4,395,198

CLASS 417

53 4,395,199
131 4,395,200
169 4,395,201
4,395,202
282 4,395,203
554 4,395,204

CLASS 418

55 4,395,205
61 A 4,395,206
102 4,395,207
4,395,208

CLASS 422

103 4,395,382
112 4,395,383

CLASS 423

1 4,395,384
234 4,395,385
249 4,395,386
305 4,395,387
339 4,395,388
341 4,395,389
573 G 4,395,390

CLASS 424

5 4,395,391
78 4,395,392
4,395,393
88 4,395,394
89 4,395,395
101 4,395,396
4,395,397
145 4,395,398
177 4,395,399
4,395,400
4,395,401
4,395,402
4,395,403
4,395,404
180 4,395,405
4,395,406
200 4,395,407
238 4,395,408
244 4,395,409
4,395,410
246 4,395,411
4,395,412
250 4,395,413
258 4,395,414
263 4,395,415
267 4,395,416
270 4,395,417
4,395,418
4,395,419
278 4,395,420
283 4,395,421
284 4,395,422
304 4,395,423
359 4,395,424

CLASS 425

33 4,395,209
71 4,395,210
174.4 4,395,211
185 4,395,212
211 4,395,213
214 4,395,214
290 4,395,215
4,395,216
382 R 4,395,217
392 4,395,218
405 R 4,395,219
413 4,395,220
467 4,395,221
548 4,395,222

CLASS 426

3 4,395,425
62 4,395,426
231 4,395,427
266 4,395,428
271 4,395,429
534 4,395,430
600 4,395,431

CLASS 427

34 4,395,432
35 4,395,433
38 4,395,434
4,395,435
53.1 4,395,436
78 4,395,437
94 4,395,438
132 4,395,439
180 4,395,440
211 4,395,441
236 4,395,442
387 4,395,443
388.4 4,395,444
407.1 4,395,445

CLASS 428

35 4,395,446
66 4,395,447
99 4,395,448
105 4,395,449
116 4,395,450
141 4,395,451
148 4,395,452
216 4,395,453
290 4,395,454
299 4,395,455
304.4 4,395,456

312.4 4,395,457
367 4,395,458
391 4,395,459
408 4,395,460
412 4,395,461
420 4,395,462
447 4,395,463
546 4,395,464
626 4,395,465
695 4,395,466
697 4,395,467

CLASS 429

31 4,395,468
34 4,395,469

CLASS 430

39 4,395,470
45 4,395,471
47 4,395,472
58 4,395,473
67 4,395,474
69 4,395,475
102 4,395,476
216 4,395,477
217 4,395,478
258 4,395,479
309 4,395,480
326 4,395,481
4,395,482
411 4,395,483
620 4,395,484
903 4,395,485

CLASS 431

10 4,395,223
31 4,395,224
62 4,395,225
76 4,395,226
142 4,395,227
168 4,395,228
261 4,395,229
286 4,395,230

CLASS 432

11 4,395,231
32 4,395,232
176 4,395,233

CLASS 434

33 4,395,234
219 4,395,236
270 4,395,235

CLASS 435

6 4,395,486
22 4,395,487
161 4,395,488
190 4,395,489
201 4,395,490
262 4,395,491
283 4,395,492
289 4,395,493

CLASS 436

111 4,395,494

CLASS 440

27 4,395,237
53 4,395,238
61 4,395,239
86 4,395,240

CLASS 441

65 4,395,241

CLASS 445

5 4,395,242
6 4,395,243
25 4,395,244

CLASS 455

119 4,395,776
157 Re.31,327
183 4,395,777
276 4,395,778
306 4,395,779
607 4,395,780

CLASS 464

49 4,395,245
153 4,395,246
158 4,395,247

CLASS 474

24 4,395,248
93 4,395,249
111 4,395,250
4,395,251

CLASS 493

28 4,395,252
87 4,395,253
196 4,395,254
439 4,395,255

CLASS 494

38 4,395,256
47 4,395,257

CLASS 518

704 4,395,495

CLASS 523

107 4,395,496
135 4,395,497
158 4,395,498
206 4,395,499
221 4,395,500
351 4,395,501
415 4,395,502
440 4,395,503

CLASS 524

14 4,395,504
55 4,395,505
68 4,395,506
101 4,395,507
103 4,395,508
127 4,395,509
230 4,395,510
371 4,395,511
413 4,395,512
599 4,395,513
600 4,395,514
832 4,395,515

CLASS 525

71 4,395,516
168 4,395,517
180 4,395,518
240 4,395,519
502 4,395,520
4,395,521
524 4,395,522

CLASS 526

64 4,395,523
230 Re.31,322
307.2 4,395,524
307.6 4,395,525

CLASS 528

18 4,395,526
26 4,395,527
45 4,395,528
4,395,529
48 4,395,530
49 4,395,531
75 4,395,532
77 4,395,533
126 4,395,534
137 4,395,535
206 4,395,536
219 4,395,537
272 4,395,538
291 4,395,539
345 4,395,540
367 4,395,541
481 4,395,542

CLASS 536

56 4,395,543
87 Re.31,323

CLASS 542

413 4,395,544

CLASS 544

74 4,395,545
168 4,395,546
184 4,395,547
190 4,395,548
252 4,395,549
253 4,395,550
282 4,395,551

CLASS 546

118 4,395,552
235 4,395,553
250 4,395,554
289 4,395,555

CLASS 548

126 4,395,556
413 4,395,557
422 4,395,558
485 4,395,559

CLASS 549

391 4,395,560
510 4,395,561

CLASS 556

431 4,395,562
445 Re.31,324
459 4,395,563
470 4,395,564

CLASS 560

24 4,395,565
87 4,395,566
124 4,395,567
198 4,395,568
222 4,395,569

CLASS 562

435 4,395,570
466 4,395,571

CLASS 564

399 4,395,572
492 4,395,573

CLASS 568

11 4,395,574
442 4,395,575
913 4,395,576
936 4,395,577

CLASS 585

10 4,395,578
444 4,395,579
639 4,395,580

CLASS 604

65 4,395,258
67 4,394,862
4,395,259
90 4,394,863
122 4,395,260

CLASSIFICATION OF DESIGNS

D2— 418 269,824
D3— 35 269,825
44 269,826
D4— 03 269,827
D6— 33 269,828
57 269,829
68 269,830
75 269,831
76 269,832
114 269,833
146 269,834
181 269,835
188 269,836
191 269,837
242 269,838
D7— 334 269,839
351 269,840
269,841
269,842
D8— 7 269,844
01 269,843
62 269,845
269,846
269,847
97 269,848
303 269,849
269,850
356 269,851
399 269,852
D9— 326 269,853
347 269,854
398 269,855
418 269,856
D10— 15 269,857
47 269,858
121 269,859
125 269,860
D11— 76 269,861
82 269,862
83 269,863
D12— 124 269,864
143 269,865
154 269,866
179 269,867
D13— 10 269,868
D14— 30 269,869
269,870
34 269,871
269,872
53 269,873
63 269,874
100 269,875
D15— 80 269,876
81 269,877
124 269,878
199 269,879
D16— 45 269,880
D18— 24 269,881
D19— 59 269,882
D21— 269,883
65 269,884
269,885
269,886
162 269,887
173 269,888
191 269,889
209 269,890
210 269,891
269,892
269,893
269,894
D22— 1 269,895
269,896
19 269,897
24 269,898
25 269,899
28 269,900
D23— 97 269,901
150 269,902
D24— 08 269,903
18 269,904
21 269,905
47 269,906
50 269,907
64 269,908
D25— 23 269,909
74 269,910
269,911
77 269,912
D26— 63 269,913
D28— 8.1 269,914
46 269,915
D30— 1 269,916
D32— 51 269,917
D34— 44 269,918

CLASSIFICATION OF PLANTS

P.— 30 5,073
38 5,074
50 5,075
74 5,076

GEOGRAPHICAL INDEX
OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1	Kentucky	21	Oregon	41
Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
District of Columbia	11	Nebraska	31	Virginia	51
Florida	12	Nevada	32	Virgin Islands	52
Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
Hawaii	15	New Mexico	35	Wisconsin	55
Idaho	16	New York	36	Wyoming	56
Illinois	17	North Carolina	37	U.S. Air Force	57
Indiana	18	North Dakota	38	U.S. Army	58
Iowa	19	Ohio	39	U.S. Navy	59
Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

01 : 4,395,590
04 : 4,394,935
4,394,982
4,395,014
4,395,428
4,395,585
4,395,631
4,395,703
4,395,732
4,395,753
05 : 4,395,539
06 : 4,394,788
4,394,800
4,394,804
4,394,814
4,394,828
4,394,896
4,394,906
4,394,919
4,394,920
4,394,921
4,394,993
4,394,997
4,395,001
4,395,007
4,395,027
4,395,041
4,395,055
4,395,061
4,395,077
4,395,084
4,395,089
4,395,116
4,395,156
4,395,157
4,395,160
4,395,178
4,395,180
4,395,184
4,395,230
4,395,236
4,395,254
4,395,258
4,395,263
4,395,293
4,395,300
4,395,309
4,395,343
4,395,344
4,395,346
4,395,348
4,395,382
4,395,438
4,395,451
4,395,458
4,395,488
4,395,530
4,395,571
4,395,589
4,395,610
4,395,636
4,395,640
4,395,651
4,395,660
4,395,670
4,395,678
4,395,679
4,395,680
4,395,691
4,395,701
4,395,708
4,395,723
4,395,725
4,395,740
4,395,751
4,395,760
4,395,774
08 : 4,394,956
4,395,029
4,395,033
09 : Re.31,325
4,394,783
4,394,820
4,394,830
4,394,834
4,394,870
4,394,905
4,394,945
4,395,059
4,395,075
4,395,091
4,395,135
4,395,149
4,395,195
4,395,255
4,395,295
4,395,302
4,395,369
4,395,375
4,395,453
4,395,532
4,395,547
4,395,552
4,395,561
4,395,592
4,395,602
4,395,616
4,395,645
4,395,665
4,395,719
4,395,756
10 : Re.31,324
4,395,131
4,395,449
4,395,455
11 : 4,395,127
12 : 4,394,860
4,394,861
4,394,887
4,394,969
4,394,981
4,395,030
4,395,065
4,395,086
4,395,093
4,395,126
4,395,244
4,395,347
4,395,573
4,395,646
4,395,676
4,395,688
4,395,712
4,395,749
13 : 4,394,799
4,394,955
4,395,042
4,395,308
4,395,378
4,395,486
17 : Re.31,326
4,394,807
4,394,862
4,394,873
4,394,876
4,394,888
4,394,909
4,394,937
4,395,020
4,395,044
4,395,053
4,395,167
4,395,173
4,395,174
4,395,190
4,395,216
4,395,238
4,395,239
4,395,253
4,395,316
4,395,341
4,395,388
4,395,420
4,395,441
4,395,505
4,395,591
4,395,626
4,395,627
4,395,734
18 : 4,394,811
4,394,821
4,394,929
4,394,951
4,394,958
4,394,962
4,395,142
4,395,246
4,395,276
4,395,328
4,395,410
4,395,560
4,395,609
4,395,737
19 : 4,394,911
4,394,912
4,394,913
4,395,040
4,395,129
4,395,523
20 : 4,394,879
4,395,137
4,395,731
21 : 4,395,019
4,395,181
4,395,361
22 : 4,394,782
4,394,801
4,395,389
24 : 4,394,805
4,395,095
4,395,123
4,395,154
4,395,395
4,395,452
4,395,558
4,395,583
4,395,635
4,395,684
4,395,773
4,395,775
25 : 4,394,802
4,394,822
4,394,996
4,395,015
4,395,036
4,395,046
4,395,102
4,395,113
4,395,124
4,395,143
4,395,205
4,395,224
4,395,30·
4,395,397
4,395,464
4,395,472
4,395,490
4,395,493
4,395,511
4,395,518
4,395,543
4,395,574
4,395,624
4,395,638
4,395,647
4,395,671
4,395,748
4,395,758
26 : 4,394,791
4,394,852
4,394,853
4,394,856
4,394,890
4,394,897
4,394,900
4,394,944
4,394,954
4,395,062
4,395,070
4,395,078
4,395,151
4,395,182
4,395,189
4,395,196
4,395,213
4,395,264
4,395,303
4,395,306
4,395,311
4,395,313
4,395,351
4,395,393
4,395,422
4,395,427
4,395,460
4,395,462
4,395,625
4,395,677
4,395,697
4,395,698
4,395,699
4,395,700
4,395,733
27 : 4,394,784
4,394,797
4,394,818
4,394,825
4,394,831
4,394,845
4,394,904
4,394,968
4,394,989
4,395,031
4,395,032
4,395,144
4,395,206
4,395,227
4,395,269
4,395,315
4,395,426
4,395,498
4,395,529
4,395,742
4,395,767
28 : 4,395,158
29 : 4,394,868
4,394,878
4,395,275
4,395,292
4,395,298
4,395,374
31 : 4,394,966
33 : 4,394,844
4,395,045
4,395,711
4,395,772
34 : Re.31,323
4,394,849
4,394,863
4,394,930
4,394,933
4,395,004
4,395,005
4,395,043
4,395,063
4,395,081
4,395,122
4,395,134

4,395,232
4,395 261
4,395,294
4,395,304
4,395,307
4,395,310
4,395,323
4,395,324
4,395,325
4,395,327
4,395,332
4,395,359
4,395,366
4,395,370
4,395,383
4,395,394
4,395,401
4,395,425
4,395,430
4,395,448
4,395,467
4,395,499
4,395,504
4,395,513
4,395,520
4,395,521
4,395,522
4,395,527
4,395,528
4,395,536
4,395,548
4,395,554
4,395,556
4,395,575
4,395,577
4,395,593
4,395,594
4,395,599
4,395,637
4,395,655
4,395,675
4,395,687
4,395,729
4,395,735
4,395,738
4,395,765
4,395,769
4,395,770
35 : 4,394,882
36 : Re.31,321
4,394,816
4,394,857
4,394,864
4,394,928
4,394,957
4,394,990
4,395,038
4,395,083
4,395,097
4,395,108
4,395,155
4,395,165
4,395,168
4,395,221
4,395,234
4,395,235
4,395,248
4,395,265
4,395,267
4,395,270
4,395,271
4,395,285
4,395,322
4,395,352
4,395,380
4,395,423
4,395,457
4,395,459
4,395,461
4,395,463
4,395,471
4,395,475
4,395,477
4,395,478
4,395,496
4,395,507
4,395,514
4,395,526
4,395,553
4,395,563
4,395,564
4,395,582
4,395,596
4,395,613
4,395,620
4,395,648
4,395,716
4,395,720
4,395,722
4,395,728
4,395,759
37 : 4,395,417
4,395,454
4,395,566
38 : 4,395,012
39 : 4,394,786
4,394,794
4,394,806
4,394,858
4,394,910
4,394,916
4,394,927
4,395,013
4,395,018
4,395,057
4,395,140
4,395,179
4,395,192
4,395,209
4,395,214
4,395,215
4,395,222
4,395,286
4,395,297
4,395,312
4,395,333
4,395,342
4,395,363
4,395,392
4,395,469
4,395,503
4,395,510
4,395,621
4,395,653
4,395,656
4,395,694
4,395,713
40 : 4,394,880
4,394,926
4,395,017
4,395,204
4,395,338
4,395,340
4,395,385
4,395,509
4,395,628
4,395,664
41 : 4,395,096
4,395,186
4,395,600
4,395,672
42 : 4,394,787
4,394,795
4,394,803
4,394,809
4,394,866
4,394,872
4,394,934
4,394,941
4,395,047
4,395,071
4,395,076
4,395,161
4,395,198
4,395,219
4,395,242
4,395,272
4,395,278
4,395,279
4,395,296
4,395,373
4,395,387
4,395,424
4,395,432
4,395,444
4,395,468
4,395,479
4,395,524
4,395,567
4,395,569
4,395,570
4,395,618
4,395,641
4,395,674
4,395,686
4,395,696
4,395,702
4,395,706
4,395,710
44 : 4,395,542
45 : 4,394,790
4,395,170
4,395,299
47 : 4,394,869
4,395,290
4,395,368
4,395,747
48 : Re.31,327
4,394,810
4,394,826
4,394,846
4,394,881
4,394,883
4,394,884
4,394,938
4,394,946
4,394,947
4,394,984
4,395,016
4,395,028
4,395,035
4,395,052
4,395,060
4,395,185
4,395,187
4,395,200
4,395,317
4,395,356
4,395,358
4,395,372
4,395,533
4,395,578
4,395,661
4,395,663
49 : 4,395,039
4,395,260
50 : 4,395,233
51 : 4,394,819
4,394,837
4,394,877
4,394,901
4,394,952
4,395,241
4,395,404
4,395,540
4,395,662
53 : 4,394,859
4,394,871
4,394,983
4,395,000
4,395,009
4,395,068
4,395,172
4,395,220
4,395,367
4,395,450
54 : 4,394,975
4,395,572
55 : 4,394,829
4,394,893
4,394,898
4,394,915
4,394,948
4,395,193
4,395,240
4,395,245
4,395,249
4,395,318
4,395,339
4,395,484
4,395,606

DESIGN PATENTS

04 : 269,849
269,897
06 : 269,828
269,830
269,845
269,852
269,855
269,857
269,858
269,882
269,889
269,891
269,892
269,893
269,895
09 : 269,848
269,896
10 : 269,906
12 : 269,909
17 : 269,836
269,844
269,873
269,900
269,903
18 : 269,833
269,888
19 : 269,878
20 : 269,890
21 : 269,883
23 : 269,832
26 : 269,916
27 : 269,850
29 : 269,831
34 : 269,834
269,868
36 : 269,829
269,838
269,854
269,856
269,862
269,863
37 : 269,835
269,918
39 : 269,908
269,911
42 : 269,827
269,913
45 : 269,917
47 : 269,837
269,879
48 : 269,826
269,876
269,881
51 : 269,861
269,874
269,915
53 : 269,843
269,902
55 : 269,839

PLANT PATENTS

06 : 5,073
5,074
42 : 5,075

U.S. GOVERNMENT PRINTING OFFICE : O—1983

CHANGE OF ADDRESS FORM

NAME—FIRST, LAST

COMPANY NAME OR ADDITIONAL ADDRESS LINE

STREET ADDRESS

CITY | STATE | ZIP CODE

PLEASE PRINT OR TYPE

(or) COUNTRY

Mail this form to: NEW ADDRESS

Superintendent of Documents
Government Printing Office SSOM
Washington, D.C. 20402

Attach last subscription label here.

SUBSCRIPTION ORDER FORM

SUBSCRIPTION ORDER FORM

ENTER MY SUBSCRIPTION TO:

@ $ Domestic; @ $ Foreign.

NAME—FIRST, LAST

COMPANY NAME OR ADDITIONAL ADDRESS LINE

STREET ADDRESS

CITY | STATE | ZIP CODE

PLEASE PRINT OR TYPE

(or) COUNTRY

☐ Remittance Enclosed (Make checks payable to Superintendent of Documents)

☐ Charge to my Deposit Account No. .....

MAIL ORDER FORM TO:
Superintendent of Documents
Government Printing Office
Washington, D.C. 20402